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ORIGINAL LECTURES.

LECTURE ON THE PRINCIPLES OF PLASTIC OR REPARATIVE SURGERY: WITH AN ATTEMPT AT CLASSIFYING PLASTIC OPERATIONS.

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UNDER the term plastic surgery are grouped those operations which have for their object the construction, usually from the patient's own tissues, of absent parts, and the reposition or curtailment of parts displaced or deformed by accident or disease. The word "plasty" is often used with a prefix to indicate the organ formed: thus, "rhinoplasty" means the reconstruction of a nose; "cheiloplasty," the formation of a lip.

Plastic surgery is called into play to overcome both congenital and acquired defects and deformities. Its objects, therefore, may be stated to be—1, to correct deformity due to imperfect fœtal development, as hare-lip and cleft palate; 2, to replace parts lost or deformed by injury or ulceration, as in closing fistules or clefts and reconstructing destroyed noses or lips; 3, to relieve or prevent distortion from cicatricial contraction, as after burns, cervical abscesses and the removal of tumors requiring ablation of a large amount of integument; and, 4, to curtail organs rendered unseemly by abnormal growth, as in greatly hypertrophied nose or tongue and in large and protruding ears.

The structures used in constructive operations are especially skin and subcutaneous cellular tissue, though mucous membrane, which becomes cutaneous when removed to the external surface, muscle, periosteum, and even bone, are at times successfully utilized.

The steps of a plastic operation are to be followed in regular succession, and the plan of procedure should be clearly fixed in the operator's mind before he makes the first incision. The patient must be in good health, lest erysipelas or ulcerative action attack the wounds made. When parts destroyed by syphilis are about to be reconstructed, it must be ascertained that no syphilitic manifestations have occurred for many months, since a recurrence of specific ulceration would destroy the success of the plastic operation, and perhaps render future measures impossible. The successive steps are—1, freshening the edges of the vacuity to be filled, and obtaining one or more flaps, if such are required; 2, arresting all bleeding, since clots between the raw surfaces prevent union by first intention; 3, adjusting the parts in proper relation without tension, and retaining them in apposition by sutures; 4, closing the gaps left by removal of the flaps, if such have been employed; 5, dressing all the wounds with non-irritating applications; and, 6, preventing motion and frequent handling of the parts.

In complicated reparative procedures it is often necessary to accomplish the desired end by a series of operations, each one of which effects a result which affords a basis for subsequent measures. The time between any two operations may be weeks or months, for the secondary operation should not be undertaken until cicatrization and shrinkage have fully determined the condition gained by the primary one.

In applying the sutures, doubling-in of the edges of the flaps can be prevented by introducing the needle obliquely so that the punctures on the inner surface are farther from the margin than the external punctures. This causes the apposed edges to pout out a little at first; but the protrusion disappears with cicatrization: if not, it can be pared away subsequently. Wire sutures are generally preferable to thread, and may be fastened by twisting or with perforated shot. A few deeply-placed sustaining sutures may be advantageous in maintaining approximation, when the plastic operation requires the union of large surfaces extending inward to a considerable depth. The strain is thus taken from the superficial sutures, and rapid union of all portions of the wound is encouraged. Sometimes the support given by the pin suture makes it preferable to the interrupted suture. The tongue-and-groove suture of Dr. Joseph Pancoast is often a very excellent method of maintaining apposition in rhinoplasty and operations for exstrophy of the bladder. It consists in slipping the flap margin, which has been bevelled, into a groove made by dissecting up the edge of skin surrounding the raw surface to be

covered. Four raw surfaces are thus apposed. Wire or thread sutures are then applied through the several layers, so that the ends of each stitch can be tied externally over a perforated button or cylinder.

Between the ordinary metallic sutures stitches of thread are sometimes employed to make very accurate apposition of thin edges. They can usually be removed early, before it is safe to take out the metallic sutures. Hence the irritating effect of the thread is not exerted.

The gap left by the removal of a flap should be closed, if possible, by drawing the integument together, or by inserting a flap from the neighborhood, if one can be obtained which will put cicatricial tension in a less dangerous locality. If neither means is applicable, provision should be made for healing by granulation. Often the tissue dissected away to make a raw surface for adhesion of the flap can be utilized in closing the hiatus left by the elevation of that flap.

The various plastic procedures are included in three methods of operating, which I shall term respectively the methods by displacement, by interpolation, and by retrenchment. Under the displacement method are included operations done by simple approximation and by sliding. Under the method by interpolation are classed procedures accomplished by transferrence and by transplantation. The relations and characteristics of these modes of operating will be seen by the schedule.

METHODS USED IN PLASTIC SURGERY.

I.—DISPLACEMENT, stretching or sliding tissues.

1. *Simple approximation after freshening the edges*, as in hare-lip, fistules, etc.
2. *Sliding into position after transferring tension to adjoining localities*, as in V-shaped incision for ectropium, in linear incisions to allow stretching of skin to cover large wounds and to relax contracted cicatrices.

II.—INTERPOLATION, borrowing material from adjacent regions, from a limb, or from another person.

1. *Transferring flap with a pedicle.*
   A. Putting in place at once,—
      1. By rotating flap on the pedicle in its own plane through one-quarter or one-half a circle, as in making upper eyelid or nose from forehead.
      2. By twisting flap on its pedicle, as in making side of nose from lip.
      3. By everting flap entirely, so that its raw surface is uppermost, as in covering exstrophy of bladder by scrotal flap.
      4. By superposing one flap on another which has been everted. This is done where a thick wall is desirable, as in closing the front of an exstrophy of the bladder.
      5. By jumping, or carrying flap across a bridge of skin, and fixing only its end to the part to be repaired. When the flap has become attached, the pedicle is severed. This method is rarely employed.

   B. Putting in place gradually by successive migrations.—By same manœuvres as when the flap is placed at once in its permanent position. This method is not very commonly needed, but may be valuable when there is nothing but cicatricial material in the immediate vicinity of the part to be repaired.

2. *Transplanting without a pedicle.*
   A. By carefully suturing in the gap areas of tissue recently dissected from distant regions.
   B. By skin-grafting.
   C. By readjusting finger-tips, ears, and noses recently completely severed by injury.

Transplanting, except skin-grafting, is not very successful.

III.—RETRENCHMENT, removing superfluous material and getting cicatricial contraction.

1. By cutting out semi-elliptical or elliptical pieces of tissue, as in ptosis, cystocele, and prolapse of the rectum.
2. By cutting out triangular or wedge-shaped portions of tissue, as in closing ruptured perineum, decreasing the size of a lip, ear, or nose.

Retrenchment is often valuable, because it decreases the relative size of features; thus, if a nose has been partially lost, the upper lip appears too large, and its diminution will render the deficient nose less noticeable. When material is taken from the prominent feature, and especially if it is added to the other, the normal proportion is nearly re-established and deformity greatly diminished.

To secure success in plastic devices certain precautions should be observed. In the first place, the patient should be in good general health and free from irritation or inflammation about the seat of proposed operation. In transferring or transplanting it is essential to select normal integument for the flap, because cicatricial tissue is almost sure to slough if dissected from the subjacent structures. Approximation and sliding operations, however, may be successfully performed with cicatricial tissue, because these methods interfere comparatively little with the vascular supply from beneath.

All flaps should be made large, thick, and with a good vascular supply through a wide pedicle. As soon as the flap is dissected loose, it shrinks and becomes paler and cooler. Hence it should consist of skin and plenty of subcutaneous tissue, because thick flaps contract less and are more vascular. It should be made about one-third larger in area than the space to be filled, and should be allowed to cool as little as possible by being placed in position as quickly as practicable. For the last two reasons, I consider it preferable to freshen the edges of the part to be repaired before making the flap. This is, of course, especially true in the transplanting method.

It is sometimes well to cut a diagram of the flap out of paper or cloth, and mark a similar outline upon the skin with ink before beginning the dissection of the flap. It must be remembered that when the flap is formed it contracts very much. At the same time, the gap from which it has been taken appears larger than really is the fact, because of retraction of the margins of the wound. Nevertheless, it is well to make the flap at least one-third larger and much thicker than the space into which it is to be interpolated would seem to require, since the flap shrinks at once, and contraction and absorption from cicatricial changes go on for many weeks after union has occurred. Any redundancy is readily removed when the lapse of time proves it to actually exist.

To guard against imperfect nutrition and consequent sloughing of the flap, it is well to make its long axis correspond with the direction of the arterial supply, and to have its base presenting towards the cardiac portion of the arteries. Where there is very free anastomosis, as upon the face, this rule may be disregarded to a considerable extent. The calibre of the supplying vessels must not be interfered with by too much twisting or tension of the pedicle, which must always be wide and thick. Injurious tension on the pedicle can frequently be prevented by cutting a pedicle with curved margins, which will allow increased stretching without occluding the vessels.

Skin free from hairs should be selected when possible, unless it is desired to make eyebrows.

The gap to be filled by interpolation and parts to be united by approximation should have their surfaces freshened by such free incisions as will give abundant areas of contact for union by first intention. It is an error to pare away so little tissue that only a thin raw edge is obtained. It is necessary to have broad surfaces of contact to make successful plastic operations, and these must be obtained even at the sacrifice of considerable material. The additional material removed will not be so great but that it can be supplied during the subsequent steps of the operation. Operations for hare-lip and torn perineum are often imperfect because of neglect of this rule.

When all hemorrhage from the flaps and freshened edges has been controlled, accurate approximation is to be made by numerous sutures, which should hold the parts merely in contact, allowing them to lie loosely and without tension.

It is important in constructing new noses and other features to be satisfied at first with obtaining a bulky semblance of the organ, and not to endeavor to trim down the structures to an accurate conformation, because it is impossible to estimate the amount and character of cicatricial shrinkage which will inevitably occur.

Exudation and organization of lymph sufficient to hold the parts together with moderate firmness occur in from two to three days; then some or all of the sutures may usually be removed. Metallic sutures cause so little local irritation that they may be allowed to remain as long as there is any danger of disruption of the adhering parts. The silk sutures, which are often useful in securing accurate adjustment at the very edges of the wounds, are generally removed early.

The success following well-devised and carefully-performed plastic operations is very gratifying. It is especially so in cos-

metic operations, since the improved appearance, though not equal to the normal condition, is a great solace to the disfigured patient. It is always a long time before the cicatrices become white and soft: therefore the full result is not apparent until many months have elapsed. The scars always remain visible, however: hence the photographic illustrations of many published cases are deceptive in the apparent absence of scarring. The disability due to fistules, ruptured perineum, and many other conditions can often be entirely removed by plastic surgery.

If gangrene of the flap does not occur before the end of the fourth day, it is not likely to take place, and the integrity of the operation is pretty well assured. If, however, during the first three or four days, the flap becomes grayish and pulpy and shows a loosened cuticle, or, on the other hand, if it assumes a dry and withered appearance, it is evident that destruction of more or less tissue by sloughing is supervening. The surgeon should, nevertheless, leave the parts in position, keep them warm and moist, and disturb the dressings as little as possible, because the gangrene may involve only the edges or the superficial layers of the flaps. A very small amount of living tissue remaining after the limitation of the sloughing process will often be very serviceable in making the operation entirely, or at least partially, successful.

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ORIGINAL COMMUNICATIONS.

MILK ANALYSIS.

Read before the Philadelphia County Medical Society, February 22, 1882,

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GENTLEMEN,—In addressing you this evening I desire to lay before you the results of some experiments made in the last year with milk, and to detail a method for its analysis which I have devised. If my results are correct,—and I am quite satisfied they are,—they will prove useful in putting upon a more settled basis the much-vexed question of the artificial feeding of infants; and my method of analysis offers a rapid means of determining with certainty and exactitude whether any given specimen of commercial milk has been adulterated. The question of the composition of milk may seem, to any one who has not investigated the subject, one upon which ample and exact information may be had by turning to any one of the many standard works on physiological chemistry. That this is not the case, in regard to human milk at least, an examination of a number of books has convinced me. The most widely different results are quoted without comment by different authors, and in some instances there are placed upon the same page, in parallel columns, figures so different that an examination of them makes it plain that both cannot be correct. Two of the most widely quoted analyses are those of Vernois and Becquerel, and of Simon, whose results, which are nearly identical, seem to me to be certainly incorrect. These analyses are taken as standard by Carpenter, Kirke, Marshall, Edward Smith, Kehrer, Gorup-Besanez, and others. The time is too short for me at present to make a detailed statement of their processes, or to attempt to show what I consider to be the fallacious portions. It will be sufficient to say that Vernois and Becquerel do not separate each of the constituents of milk by itself, but satisfy themselves in determining the amount of casein simply by difference; that is, when they come to the stage of analysis at which they desire to separate the casein and sugar, they attempt to precipitate the casein and filter off the sugar; then they estimate the amount of sugar in the filtrate, and assume that what is not sugar is casein. Any one who will repeat their process will find, I think, a large proportion of sugar left on the filter, and this they class as casein, thereby making the percentage of casein much larger, and that of sugar much less, than it actually is. Simon attempts to separate the casein and sugar by the addition of an excess of alcohol to a concentrated watery solution of the two. If a concentrated solution of milk-sugar in water is treated with an excess of alcohol, a part of the sugar is precipitated. This precipitation of sugar doubtless took place in Simon's experiments, and caused him to class a portion of the sugar as casein. Mr. Wanklyn, who has written the best book with which I am acquainted upon "Milk Analysis," says, "Milk exhibits great constancy of composition. . . . The milk of an animal has probably very much the same constancy of composition as the blood of

the animal. . . . As will be readily comprehended, this constancy of composition is a cardinal fact in milk analysis. If milk were variable in strength, as urine is, chemical analysis would fail to detect the watering of milk." Mr. Wanklyn confines himself to the examination of cow's milk; but if what he says of cow's milk is true, why should the case be different with human milk? Why should human milk vary so much as the analyses of different chemists would lead us to believe, when such great uniformity of composition is exhibited by the milk of the cow? I will quote three analyses of human milk to show how widely at variance are the results of different chemists: first, one by Henri and Chevallier, then that of Vernois and Becquerel (the mean of eighty-nine analyses), and, last, one from the *Practitioner* (vol. xxvi., 1881), by Messrs. Dolan and Wood, of Halifax.

	H. and C.	V. and B.	D. and W.
Water.....	87.95	88.908	89.045
Fat.....	3.55	2.666	1.764
Casein....	1.52	3.924	7.005
Sugar.....	6.50	4.364	1.921
Ash.....	.45	.138	.265
	100.000	100.000	

(The analysis of Henri and Chevallier, it will be observed, does not add up quite correctly. It is quoted as found in the work of Gorup-Besanez.)

It is impossible that these three analyses can all be correct. I cannot believe that human milk ever contained, as Messrs. Dolan and Wood state, seven per cent. of casein and less than two per cent. of sugar. The method they pursued was to estimate the sugar by the use of Fehling's solution, and calculate the casein by difference. The copper test, I am convinced, is not to be depended upon as a means of quantitative analysis if there is no way of proving the results arrived at, and when an unknown quantity of sugar is to be determined. In support of this belief, I may state that I once sent two solutions of milk-sugar of known strength to a reputable sugar-chemist, and asked him to estimate the amounts contained by means of the copper test. In both instances he concluded that the solutions contained about one-third less than was actually the case.

I agree with Mr. Wanklyn that milk usually exhibits great uniformity of composition. This is particularly the case with that which we get from dealers, for then it is always the milk of many cows mixed together; and of course the mixed milk of a whole herd is not liable to the same variations as would be the milk of any one individual cow. There is one point, however, upon which I must differ from him, and it is that I believe the fat to vary very much, although the other constituents do exhibit great uniformity in their amounts.

My own analyses prove quite to my satisfaction—and this is the point I particularly desire to bring to the attention of the Society—that human milk never contains more than from seven-tenths of one, to one and a half per cent. of casein, and about seven per cent. of sugar. Now, if this be true, how different is human milk in its composition from the idea commonly accepted by the profession! In many books upon physiological chemistry the results of Vernois and Becquerel are quoted as being the mean of eighty-nine analyses, and therefore they are given the first place in authority. A comparison of their figures and those of Simon with any ordinary analysis of cow's milk shows almost an identity, the only difference of any considerable amount being in the quantities of ash given; and yet who is prepared to say that human and cow's milk are identical? I quote for comparison an analysis of "average country milk," as given by Mr. Wanklyn ("Milk Analysis," etc., New York, D. Van Nostrand, 1874), and with it the mean result, as given by Vernois and Becquerel (incorrect, in my opinion), of eighty-nine analyses of human milk. (Mr. Wanklyn's figures have been reduced to percentage.)

	Wanklyn.	V. and B.
Water	87.551	88.908
Fat.....	3.071	2.666
Casein.....	4.043	3.924
Sugar.....	4.626	4.364
Ash	.709	.138
	100.000	100.000

Some chemists have attempted to show that the difference lies in the casein, that of cow's milk being unlike that found in human milk. The fact seems to me to be plain, whatever may be the differences between the two caseins, that the milk of the woman contains only one-third as much as that of the cow. The question is often asked, Why does human milk coagulate so much less readily and so differently from cow's milk? The answer is that it contains a much less pro-

portion of casein, the coagulable matter. Human milk cannot form the large leathery coagula so often produced in cow's milk, because the casein is relatively dissolved in a so much greater quantity of water. Biedert (*Virchow's Archiv*, Bd. lx., 1874) has written an elaborate and much-quoted article to prove the difference between the caseins contained in human and cow's milk, and makes a very strong case, but fails to notice the great and cardinal difference, that the proportion of casein is much less in the one than in the other. Casein is in its nature akin to albumen, and every physician has noticed the different effects produced when albuminous urines containing different amounts of albumen are boiled or treated with acid. If the amount of albumen is small, the coagulation takes place in the form of a mere opalescence of the fluid, the coagula are individually so small that they cannot be seen; whereas if the amount of albumen be large, the coagulation takes place in heavy white flakes. Why can we not accept so plain an explanation of the different coagulability of the two milks, that the one contains much less coagulable matter than the other, rather than seek for some far-away difference in the chemical composition of the casein?

Casein is universally acknowledged to be the element in cow's milk which the infant stomach finds most difficult of digestion; and yet most physicians and nurses forget that in diluting milk to reduce the proportion of casein they reduce also the proportion of fat much below the amount contained in healthy human milk, and the sugar still lower, because, even in its normal condition, human milk contains much more sugar than does cow's milk. Therefore cow's milk, in order to make it a proper food for infants, should be reduced one-half or two-thirds with water, and cream and sugar added to make the fat and sugar amounts equal those contained in healthy human milk. The giving of pure cow's milk to new-born infants, as advised by M. Parrot, is altogether inadmissible, both because experience shows that infants so fed do not thrive, and on the theoretical ground that cow's milk is too unlike human milk to be a good food for the new-born infant. I wish, then, to be clearly understood to assert, as the result of my experiments, that human milk contains only from seven-tenths of one, to one and a half per cent. of casein and about seven per cent. of sugar, and that it never contains, as is the commonly accepted belief, nearly four per cent. of casein, for which latter belief I think the erroneous and widely quoted results of Vernois and Becquerel and of Simon are largely responsible.

To carry out the method of analysis I propose, 15 c.c. of milk are required. The first step is to discharge from a pipette 5 c.c. of milk into a small platinum dish, and at once weigh it and note the weight. This dish is then placed in a water-bath, and the water kept at the boiling-point until the milk is completely dried and ceases to lose weight. This takes, as Mr. Wanklyn points out, about three hours, when 5 c.c. of milk are used. (I have found most convenient as a water-bath a common skillet, and into this I place a disk of copper, with holes in it, of such a size as to hold the platinum dishes to be used, the whole being floated upon copper air-chambers soldered to the under side of the disk. This apparatus may be left for hours in the bath without any watching, and yet the platinum dishes are constantly immersed in the boiling water.) As soon as the weight becomes constant, it must be noted, and the contents are then incinerated, best over a blast-flame, and the weight again noted. (In incinerating, the heat used must at first be moderate, and then gradually increased.) This ends the work upon the first 5 c.c., and gives the amounts of water, solids not ash, and the ash. At the same time that the first 5 c.c. are weighed, 10 c.c. must be weighed in another dish, care being taken, of course, that the weight is exactly twice that of the 5 c.c. This is poured into a high, narrow bottle (the ordinary 100 c.c. graduated bottle answers the purpose), and 20 c.c. of distilled water added, this being used to wash all the milk from the vessel in which it has been weighed into the bottle. To this are now added 20 c.c. of ether. The bottle must then be tightly stoppered and agitated violently for five minutes; 20 c.c. of alcohol are then added, and it is agitated for five minutes more. If it is then set down for a few minutes, the contents will be found to have separated into two layers: on top will be found ether, containing fat in solution, and below will be a mixture of part of the ether, the alcohol, and the water, containing coagulated casein in suspension and the sugar in solution. The ethereal solution, which

is on top, is then drawn off with a pipette, as nearly as can be done without disturbing the lower layer; 5 c.c. of ether are poured on to mix with what fat is left, and this drawn off. Ether I have usually poured on and drawn off five times, 5 c.c. being used each time, so as to remove all the fat. The ethereal solution of fat is now dried over warm water, and finally, for a few minutes, over boiling water: the resulting weight—that of the dish being deducted—is, of course, the weight of the fat. We have now left in the bottle the sugar and casein, with the salts. The contents are carefully washed into a large platinum dish, and dried over the water-bath. The dried residue is treated with boiling water, and the dish and contents placed aside to settle. The undissolved casein soon settles to the bottom, and the clear solution of sugar is poured off. The solution of sugar is now again dried, and the same process repeated, the sediment being added to that which was obtained before. This must be done four or five times, until it is found that when boiling water is poured upon the dried sugar it dissolves completely, no flocculi of casein being seen in the solution. The casein residue is then, after being dried, treated once or twice with boiling water, to wash out any sugar that may have been left in it, care being taken that none of the solid casein is poured off with the matter dissolved. This sugar is added to that formerly obtained, and the two substances are then ready for the final drying, which must be done over the water-bath, and continued until they cease to lose weight sensibly. The two residues are then incinerated over the blast-flame, and the loss in the burning gives the weights of the casein and sugar.

The only error that strikes me as possible in this method is that a small portion of soluble albumen may be classed as sugar. I do not think, however, that this occurs, for I have tried in every way to separate such a substance from my sugar residue, and never succeeded in obtaining any appreciable quantity. The method possesses many advantages: it is more exact than any other I have tried, the loss being usually only a small fraction of one per cent.; then it should be valuable as offering a scientifically exact but rapid method of determining the amount of fat. The exact amount of fat in any given sample of milk can be determined in at most half an hour to an hour. When a full proximate analysis is made, the process is very tedious, taking from three to five days to be completed. If, however, it is not necessary to separate the casein and sugar,—as is the case in examining commercial milk,—an analysis can be completed in about three or four hours. The pouring of milk into the street, as has lately been done in some of our cities, because it failed to show a certain specific gravity when tested with the lactometer, is a great outrage; for an analysis which will show the amount of water, fat, and ash is the only true test of milk. The idea of separating the fat by means of ether and alcohol was suggested to my mind by the perusal of an article by Ed. J. Hallock (*American Journal of Pharmacy*, October 1, 1874). The use of the reagents in the proportions suggested by him, however, fails to effect the purpose, as any one can see who will try the process; for the oil-globules are set free instead of being dissolved in ether, as happens when my proportions are used, and they only partially rise to the top, many becoming entangled in the meshes of the coagulated casein and remaining thus distributed through the fluid. The method I propose also extracts the fat more perfectly than that used by chemists generally, of extracting it with ether from the dried residue. This I have proved by actual experiment, taking two samples of the same milk. When the fat was extracted from the dried residue of 10 c.c. of milk, 270 milligrammes only were obtained, whereas my own method gave 305 milligrammes. This difference is large enough to be a matter of great importance where such small quantities are used as is often the case in milk analysis.

In calculating results it is easiest to bring the amount of each constituent up to what is contained in 100 c.c. This is done by multiplying the amounts of water and ash by twenty, as they are arrived at by the use of 5 c.c., and those of fat, casein, and sugar by ten, as they are arrived at by the use of 10 c.c. of milk. The sum of the amounts of the different constituents will be found to be from one hundred and one to one hundred and three, as the milk happens to be of high or low specific gravity. A use of the simple rule of three enables one easily from this to calculate the quantities in parts of one hundred (percentage). I append five analyses of human milk, which I have made with great

care, and which I believe to be as nearly correct as may be:

Water	87 106	87 695	89 038	83.001	87 306
Fat	4.370	3.682	2.412	9.045	4.498
Casein	1.268	.938	.730	.787	1.083
Sugar	7.120	7.568	7.703	7.069	6.996
Ash	.136	.117	.117	.098	.117
	100.000	100.000	100.000	100.000	100 000

The error in these analyses was, in No. 1, seventy-eight thousandths of one per cent. in excess; in No. 2 there was no error; in No. 3 the loss was forty-eight thousandths of one per cent.; in No. 4 there was a loss of forty-nine thousandths of one per cent.; and in No. 5 there was twenty-nine thousandths of one per cent. in excess.

Condensed milk, in my opinion, enjoys its high reputation as an infant food because, when used as it commonly is, the proportions of casein and sugar approximate more nearly to those contained in human milk than in the usual dilutions of cow's milk; and it fails because it gives the infant too little fat, and because no preserved food can be so good as the same substance when fresh. Another grave objection to its use is that as children get older the quantity given them is increased, and they get much too large an amount of saccharine food, and become very fat, the fat being soft like that of persons who drink too much malt liquor.

In conclusion, I will reiterate that the result of my experiments has been to convince me that human milk contains only about one-third as much casein as cow's milk, and that in order to make the latter a proper food for infants we must dilute it with water and add cream and sugar. The main object of this paper has been to state my conviction that human milk never contains more than the quantity I have so often mentioned of casein; and this observation I consider as new, for, although Henri and Chevallier and some other writers have before arrived at nearly the same analytical results, yet I know of no one who has stated that human milk contains only this quantity, and never more, thereby denying the correctness of most previous analyses. If time proves my view to be correct, I think it must make a change in the views of the profession upon the proper mode of feeding infants. On some future occasion I hope to publish precise directions as to my view of the proper combination of cow's milk, cream, water, and sugar, to be used as food for new-born infants.

1322 WALNUT STREET.

THE LIGATION OF LARGE VENOUS TRUNKS.

Read before the Philadelphia County Medical Society, March 8, 1882,

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GENTLEMEN,—Two circumstances at the present moment combine to render of especial importance the renewed consideration of the hazards attending the ligation of veins: first, the fact that the use of anæsthetics and antiseptics has made much more common and justifiable than ever the undertaking of extensive operations for the removal of morbid growths; second, the fact that operative procedures involving the large vessels are now more often made incumbent upon the surgeon, since it has been demonstrated that by thorough extirpation, both of all visibly diseased tissue and of all adjacent tissue that might possibly be infected, permanent relief from many malignant growths is possible.

In the removal of foreign growths from the neck, the axilla, the groin, the ham, or the abdomen, the dangers of exposure, of wounding, or excision of a portion of a large venous trunk must always be considered.

I believe that deliberate interference with large veins is still regarded with disfavor by the profession as a whole; and, because of the increasing pressure which is now being often felt to attack them, I have ventured to introduce the subject for the purpose of eliciting the personal experience of the members of this Society. For the purpose of giving to the discussion a practical clinical direction, I will briefly detail some cases.

Case I.—Large adenoma of neck—Ablation, denudation, and exposure of internal jugular vein—Recovery, without untoward complication.—Peter H., aged 37 years, native of Sweden, of robust physique, was operated upon by me for the removal of a large cervical adenoma, November 13, 1880. The tumor, situated on the right side of the neck, was bound down by the sterno-cleido-mastoid muscle, and projected from beyond the anterior border of this muscle so as to crowd the larynx to the left of the median line. Posteriorly it occupied the space beneath the mastoid pro-

cess. The enucleation and removal of the tumor necessitated the denudation of the internal jugular vein in the middle of the neck over a space of one inch and a half, and its exposure for more than half an hour. Three veins of considerable size in the mastoid region required ligation. No special antiseptic measures were employed. The wound was dressed to secure primary union as far as possible, which was accomplished over the greater part of its extent. The venous ligatures came away during the third week. The patient made a rapid and complete recovery, without any symptom indicating any disturbance of the internal jugular vein.

Case II.—Mammary carcinoma—Ablation—Recurrence for second time in axillary glands—Ablation—Wound and ligature of axillary vein—Recovery, with persistent œdema of arm.—Mrs. Susan A., aged 63 years, was operated upon by me, January 15, 1881, for the removal of an axillary tumor which had recurred for the second time after a primary ablation of the breast for carcinoma. The primary operation I had performed May 29, 1878. A year later (July 8, 1879), immediately upon its detection, an enlarging axillary gland was removed. A second recurrence, involving other of the axillary glands, was allowed to gain greater headway before the patient applied for relief. All the axillary glands were then involved. In the course of their complete removal it was necessary to sever the subscapular vein at its point of entry into the axillary. The axillary vein was then ligated above and below the wound with silk thread, the operation not having been done antiseptically. The progress of healing was delayed only by the presence of the ligatures, which came away during the third week. At the present time—more than a year after this third operation, and nearly four years from the date of the first—this lady remains in apparent good health, without any sign of a recurrence of carcinoma; but there persists in the arm of the affected side some œdema and a perceptible diminution of strength.

Case III.—Wound of internal jugular vein—Lateral forcipressure—Recovery.—In November, 1881, W. B., aged about 45 years, stabbed himself in the neck with a small dagger. The weapon, having been thrust into the right side of the neck, passed through the sterno-cleido-mastoid, grazed the internal jugular vein, inflicting a small wound in it, and finally penetrated the trachea. My brother, Dr. James E. Pilcher, was at the side of the patient in a few minutes after the infliction of the wound, the hemorrhage meanwhile having been kept repressed by pressure. Having enlarged the wound sufficiently to enable him to identify the vessel and expose the opening into it, which was a simple slit in its anterior wall, a quarter of an inch in length, he applied a lateral ligature; but this was caused to immediately slip off by an extension of the neck, produced by the falling back of the head when the patient was being placed in bed. Hæmostatic forceps were then applied, which, perfectly arresting the hemorrhage, were left to produce permanent obliteration of the wound in the vein. They were removed on the second day thereafter. No further hemorrhage took place. The wound healed by granulation, and a perfect recovery was accomplished.

In the discussion of these cases we must consider first the dangers of the denudation of veins, referring to the writings of Broca, Ollier, and Nicaise on the subject. A consideration of the fact that in certain cases disastrous phlebitis, and in others immunity therefrom, occurs, led me to the conclusion that it is not the simple exposure of a vein which causes in any case phlebitis and thrombosis. A study of the pathology of phlebitis, as at present accepted, indicates that the cause of the occurrence of inflammation and thrombosis in denuded veins is either, and most frequently, the extension to them of inflammation from the tissues by which they are surrounded, or the violence to which their external cellular tunic has been exposed, a primary external inflammation thus being required as the necessary antecedent of the affection by extension of the inner vascular tunics. Therefore, if the character of an operation and of the after-management of the wound be such as to make possible primary union of the wound-surfaces, or their preservation from inflammation; if undue violence has not been done to the denuded vein in the course of the operation, no fear need be entertained of the development of phlebitis and extensive and progressive thrombosis within it. If, however, such favorable conditions cannot be secured, and the vein is necessarily placed at the bottom of a suppurating wound for some time, or in the course of the operation has suffered much contusion, the probabilities of the development of disastrous phlebitis are great. In such cases two courses of action are open to the choice of the surgeon,—the expectant course, which arises from the feeling that it will be time enough to combat the phlebitis when it is actually present, or the anticipatory course, which would ligate the vein at the borders of the wound and exsect its exposed portion. The prudence of a surgeon in such a case would be likely to be influenced by his views as to the dangers attending ligation.

The next point is the question of the ligation of veins. In this we are saved any embarrassment from considerations as to serious interference with the return of blood to the heart, so free are the collateral channels which supplement the great venous trunks of the body; ligation of the internal jugular even is not attended by any permanent inconvenience to the cerebral circulation, as has been abundantly demonstrated by many cases. The chief dangers which are to be apprehended from the application of ligatures to veins are inflammatory in character, being periphlebitis, thrombosis, and suppurative phlebitis proper. This inflammation, when it arises, has its origin in the perivascular connective tissue and in the outer connective-tissue tunic of the vein, and results from the irritation produced by the presence of the ligature. The application of a ligature, according to the traditional methods, always provokes inflammation in its track, while its removal is accomplished by the ulceration of the tissues which it encircles. In the vast majority of cases this inflammation is simple and circumscribed, and serves only to mat together the tissues adjacent to the ligature. The absence of any special vulnerability peculiar to the venous tunics being thus shown, those rare cases in which diffused periphlebitis, with its disastrous consequences, is produced, must be attributed to the general constitutional conditions of the particular patient.

It follows that, since in general little fear is to be apprehended of disastrous inflammatory complications following the application of a ligature to a vein, it would be better, in those cases in which in the course of an operation a vein has suffered much contusion, or if its continued exposure at the bottom of a suppurating wound is unavoidable, that the vein should be exsected rather than be left to the more imminent dangers of thrombosis.

Passing to the consideration of the treatment of wounds of veins, and of the justifiability of attacking growths the complete removal of which involves the severing of large venous trunks, it can be affirmed that the dangers from the use of the ligature are too remote to cause any hesitation in its employment, or to be permitted to embarrass the needed thoroughness in the removal of any growth.

Attention must also be called to the fact that in every case in which the ordinary silken ligature is used the continuous irritation of its presence during the three or four weeks that may be required before it is finally discharged is a source of anxiety. To lessen the disadvantages and possible dangers of such continuous irritation, we may resort to the substitution of pressure-forceps for the ligature. Experience has demonstrated that the continuous application of these for from two to four days is sufficient to secure the permanent sealing up of even large venous trunks; painless and unirritating, they may be left in the wound as long as may be deemed necessary, and then be withdrawn, having to a minimum degree interfered with primary union. The manner of their use and their possible advantages are shown in Case No. III., in which they were the means of conducting to a successful termination the hazardous experiment of securing the union of a lateral wound of the internal jugular vein without interfering with the regular current of blood along its interior. There will be but few conditions in which, for the arrest of hemorrhage from veins, the use of such forceps will not be found superior to that of the ordinary ligature in these respects: they produce less local irritation, no ulceration and division of constricted tissues, and their application is for a very much shorter period of time.

The next important point is the use of animal ligatures applied with antiseptic precautions. I hold that by the use of carbolated animal ligatures, and with proper antiseptic precautions in operating, all irritation and inflammation could be prevented in the ligation of a vein, and the primary union of wounds secured. The ligation of veins will be thus robbed of those dangers which have been seen to depend upon the irritation of their external tunic and of the perivascular connective tissue. The suppression of this element of irritation and inflammation in the reparative processes following the ligation of a vein has been a stumbling-block to many in accepting this method of securing divided vessels, since the agency of adhesive inflammation in sealing up the ends of the divided vessel has been esteemed indispensable. Its absence, therefore, after the application of an animal ligature has been thought to endanger the occurrence of secondary hemorrhage upon the absorption of the ligature. Clinically, however, this theoretical objection has not been

found to be supported. A special and minute study of the processes by which obliteration of veins is accomplished, after ligation with antiseptic catgut, is yet to be made. The elements which such a study present are very simple, thanks to the antiseptic methods which eliminate entirely the disturbing influence of inflammation. Ligation with the catgut thread means simply that at some point in its course the walls of the vein are brought into firm, close, and prolonged contact, and kept encircled by a strongly compressing force for several days at least. The condition is very analogous, each of its elements, however, being much more intense and rapid in its action, to that presented by the umbilical vein, or the foramen ovale of the interauricular septum, in the new-born child. As, in these, no process of inflammation is needed to cause the disappearance of the inner cell layer and the confluence of the connective-tissue elements, but simply the continuous apposition of their walls from disuse, so in the ligated vein as the result of apposition and compression it is not incredible that in a short time the absorption of the inner tunic and the organic union of the remaining elements of the walls of the vessel should take place.

Some experiments were made by myself, with the co-operation of my colleague, Dr. George R. Fowler, for the purpose of studying the processes of repair in veins after ligature with antiseptic catgut. They were made upon a goat; and the internal jugular and femoral veins were the vessels ligated. Microscopic slides, prepared by Dr. J. H. Hunt, showing the conditions presented on the second and ninth days after the application of the ligatures, are here presented for examination, and these diagrams on the blackboard will facilitate the explanations. In the sections, the ligature—of chromicized catgut—showed no signs of disintegration or softening, and appeared as if an integral part of the tissues among which it was lying. The division of the walls of the vein into three principal layers was well shown. The ligature appeared to be embedded in the tissue of the external tunic; the middle tunics at the constricted points appeared to have become fused together; and the inner tunics, having disappeared at the point of constriction, were traceable as *culs-de-sac* on either side. At no point was there any appearance of local congestion or of inflammation. These observations were too limited to serve as a basis for any conclusive generalization, but for purposes of discussion I will formulate the conclusions towards which they point, to substantiate or contradict which further experiment would be necessary. These preliminary propositions are that repair, in the case of veins that have been ligated with antiseptic catgut, is secured, first, by the absorption of that part of the inner coat compressed by the ligature; second, by the fusion or organic union of the apposed middle tunics; third, by the incorporation into the outer tunic of the substance of the ligature; that this repair is perfect without the intervention of any clot; that a thrombus in the *cul-de-sac* of the vein is not always present; and, finally, that throughout the whole process there is no inflammation either of the vein or of its investing connective tissue.

In conclusion, and by way of *résumé*, it may be said that, while the consideration of clinical experience and of the pathological processes attending the traditional methods of ligation had led to the conclusion that the dangers from the use of the ligature were too remote to cause any hesitation in its employment, or to be permitted to embarrass needed thoroughness in the removal of any growth, these dangers were still more minified by the use of animal ligatures under antiseptic precautions.

NOTES OF HOSPITAL PRACTICE.

PENNSYLVANIA HOSPITAL.

CLINICAL SERVICE OF JAMES H. HUTCHINSON, M.D., ONE OF THE PHYSICIANS TO THE PENNSYLVANIA HOSPITAL, PHYSICIAN TO THE CHILDREN'S HOSPITAL, ETC.

Reported by WILLIAM H. MORRISON, M.D.

ACUTE RHEUMATISM COMPLICATED BY PERICARDITIS.

GENTLEMEN,—At my last lecture I exhibited to you several cases of disease of the heart, and told you that I had other cases to show you; but I wish, before proceeding with the subject of to-day's lecture, to make a few remarks on one of the patients you saw at our last meeting.

You will recollect a young German girl who had acute rheumatism, affecting the knees principally. The knees were very much swollen, but the redness was not so

marked as is usual in rheumatism. You will also recollect that she was the subject of commencing disease of the heart. There was a well-marked systolic murmur heard at the apex, and at one time there was heard a distinct friction-sound; but this disappeared in consequence of effusion taking place into the pericardial sac. This effusion has increased in amount until dulness on percussion extends up to the first rib, and is pyramidal in shape. Dulness depending upon effusion into the pericardium assumes this pyramidal shape with the apex of the pyramid directed upward. At the present time the effusion is undergoing absorption, and she is doing well.

There were the symptoms of acute rheumatism, and also those of pericardial effusion. We have suspended the salicylate of sodium, and put her on the use of Basham's mixture. This is indicated not merely in consequence of the effusion, but also by the anæmic condition of the patient. Under this treatment the effusion seems to be undergoing absorption, and I have no doubt that in a short time the patient will be convalescent.

Pericardial effusion is sometimes a very serious complication. In the early part of my practice, while attending the Episcopal Hospital of this city, I had two deaths, one after the other, from pericardial effusion. I had left the patients apparently doing well, but on my visit the next day found them dead. As it may, therefore, be the cause of sudden death, it is not by any means a complication to be looked upon as one of no importance. In the two cases to which I have referred, the effusion was thrown out quickly. You can readily understand that a small effusion occurring rapidly will be more serious than a large effusion taking place slowly.

In these cases it is proper to insist upon the patient maintaining the recumbent position, for this throws less work on the heart and prevents embarrassment of the circulation.

AORTIC OBSTRUCTION AND MITRAL REGURGITATION.

The patient before you is an old woman who came in with some chronic arthritic trouble of the hip-joint, which is rather surgical than medical in character. Upon examining her closely, as we do all patients admitted to this hospital, we found a murmur over the heart.

This is her history: "R. C., æt. 68; native of Ireland; a widow; cook by occupation; admitted November 8, 1881. She has generally been very healthy. Several months ago she was treated in this hospital for arthritis of the left hip-joint. Since this time the joint has been free from pain until five weeks ago, when it again became painful. The pain began in the left hip, and extended down the thighs.

"The eyes are somewhat inflamed and painful, the appetite good, the bowels regular. Examination of the lungs gives negative results. Examination of the heart.—The impulse of the heart is very indistinct. It is best felt in the fifth interspace. There is no great increase in the cardiac dulness. On auscultation a murmur is heard at the apex. It is systolic in point of time. A murmur is also distinctly heard at the aortic cartilage, but is less distinct here, and not heard over the back. In the erect position the apex-murmur is less distinct; that over the aortic cartilage is a little rougher and harsher."

In the first place, with the exception of the arthritis of the left hip, there does not seem to have been at any time anything that we can assume to have been rheumatism. The examination of the heart in women, of course, presents rather more difficulty than in men. If the mammary gland is large and pendulous, it is sometimes impossible to distinguish the apex-beat. In this case, however, I find it in the fifth interspace, a little outside of the normal position: I find that there is no marked increase in cardiac dulness. It is very nearly normal.

Listening over the apex, I hear a very distinct murmur, which is systolic in point of time,—*i.e.*, it occurs with the systole of the heart. A murmur is also heard at the base of the heart. It is very important, as I have told you, not only to recognize the presence of a murmur, but also to find out, if possible, where it is most distinctly heard. I place my ear over what is known as the aortic cartilage (the second cartilage on the right side), and I hear the murmur very distinctly. It also is systolic. It therefore becomes a nice question to determine whether this murmur is identical with the one heard at the apex.

There are, as you are aware, two causes of chronic systolic murmurs,—viz., mitral regurgitation and aortic obstruction. It is, consequently, important to determine whether we have here aortic obstruction, or

mitral regurgitation, or both. This is a question usually not very difficult to determine. It simply requires a minute examination of the character, quality, and pitch of the sound. If we find these to be the same, and also find that the sound is loudest at the apex and diminishes in intensity as we approach the aortic cartilage, we have no difficulty in deciding that the two murmurs are due to the same cause, and that the murmur which is heard at the base is identical with that which is heard at the apex, and therefore dependent upon mitral regurgitation. The same reasoning is, of course, applicable when the murmur is due to aortic obstruction. If, on the other hand, we find that the murmurs are dissimilar in character, quality, and pitch, and also that there is a point midway between the aortic cartilage and the apex where the murmur is least intense, we have reason to conclude that we have two murmurs due to different causes.

I have made this examination very carefully in the present case, and I have found that the murmur at the base is rougher and harsher than at the apex. The case is, therefore, one of mitral regurgitation with aortic obstruction.

It is also necessary to determine whether or not the trouble is serious. In making an exact diagnosis of heart-disease, we of course depend to a great extent upon the physical signs, but in making our prognosis it is more important to rely upon the general symptoms.

We have here an old woman, over sixty years of age, presenting no evidences of cardiac disease except those furnished by the physical signs. In fact, I suppose this lesion might very readily have escaped attention if the patient had not had this slight arthritic attack; but, having had this, our attention was, of course, directed to the heart, and we found the murmurs. She has no serious impediment to the circulation. There is no dropsy, no albuminuria, and no tendency to congestion of the lung; no symptom which points directly to the heart except the murmurs. We can, therefore, in this case make a favorable prognosis. The slight amount of hypertrophy which has occurred is sufficient to overcome the two impediments to the circulation caused by the slight aortic obstruction and the slight mitral regurgitation. It is important in the treatment of this case to prevent the loss of this compensation. As long as the heart is able to overcome the obstructions, so long will the patient not suffer; but let her contract a severe disease, or let her general strength be run down from any cause, and dilatation of the heart will occur, which will, of course, be a serious complication.

This case calls for no special treatment. We have, therefore, treated her on general principles, to prevent, if possible, the occurrence of any dilatation of the heart. This is best done by nutrients and tonics. The arthritic attack does not call for active treatment. She is now taking good diet, cod-liver oil, and tonics. When first admitted, she was taking the iodide of potassium; but this was not continued after the active symptoms had disappeared.

ACUTE TONSILLITIS.

I shall now bring before you an example of a slight affection, but one which sometimes gives considerable trouble. It is a case of tonsillitis, or, as it is commonly called, quinsy. Inflammation of the tonsil is generally the result of a partial exposure, especially of the neck, to cold. This patient, who, as you see, is an anæmic, unhealthy-looking girl, contracted the disease while in the house under treatment for amenorrhœa. Tonsillitis may be the consequence of some general disease, as, for instance, scarlet fever, but, as I have said, it is generally the result of some local cause.

In this case the disease has passed its height, but there is still considerable enlargement of the tonsils, especially on the right side. When the patient was first taken sick, the amount of swelling was so great, and she had, in consequence, so much difficulty in opening her mouth, that it was almost impossible to get a good view of the fauces. You will notice that the tonsils are simply swollen and reddened; there is no deposit upon them. It is very important to examine carefully the throat for the presence of false membrane. If there is no membrane, the inflammation is probably of a simple character. Do not mistake, as is sometimes done, the secretion of the tonsillar glands for membrane. You can readily understand that when the tonsils are inflamed there may be, in earlier stages especially, an increased secretion, and you will often find a cheesy, curdy mass on the tonsils; but this does not indicate the presence of diphtheria.

The enlargement of the tonsils may become so great as to cause marked interference with deglutition, and also give rise to partial deafness from interference with the Eustachian tube. Even liquid food is often swallowed with great difficulty. The swelling also, by closing up the passage to the larynx, renders the respirations exceedingly labored and difficult, and may give rise to cyanosis from deficient aeration of the blood.

As a general rule, tonsillitis runs a favorable course. It reaches its greatest height in two or three days, and then there is a rapid subsidence. In other cases, however, the course is less favorable. We have the enlargement and then the breaking down of the tonsil, forming an abscess. It is sometimes necessary to puncture these abscesses. In doing so, some little care should be taken, as several large vessels run over the tonsil. It is better to make the puncture towards the posterior part, as the vessels are on the anterior portion. In some cases the gland ruptures spontaneously. In other cases we have left a chronic condition, in which the gland remains permanently enlarged. It is often necessary in such cases to resort to surgical means to get rid of it, either by caustics or by cutting off the tonsil with an instrument made for this purpose. Many of these cases of chronic enlargement will, I think, yield to nitrate of silver in solution, or to the tincture of iodine.

In this case the treatment was very simple. There was no necessity for active treatment. Formerly it was the habit in cases of tonsillitis to wash out the throat with a strong solution of nitrate of silver. I believe that if this is done in the commencement it may abort the attack; but if not done at the very beginning it will do harm. If the symptoms are not very active, it is better not to have recourse to this method, but to use milder remedies.

As this patient needed a purgative, she was given a dose of blue mass, followed by a saline. She was then placed upon the tincture of the chloride of iron, which acts both locally and constitutionally. Great benefits will sometimes be obtained from gargles. The parts will be kept clean and free from the viscid, tough mucus which frequently causes distressing symptoms. Chlorate of potassa with myrrh and muriatic acid will be found an efficient gargle after the acute period of the disease has passed. If the disease becomes chronic, and the glands show no disposition to undergo diminution, tincture of iron, tincture of iodine, or solutions of nitrate of silver may be applied. After this disease has occurred once, it is apt to leave behind it a tendency to repetition. You will often meet patients who have an attack of tonsillitis every year, or after every exposure to cold.

SIMPLE ACUTE PLEURISY.

This patient has been in the house only two days, and I have seen her but once. The symptoms and signs of the disease under which she is suffering are very well marked, and therefore the case is a good one to bring before you.

The following is the history: "R. D., æt. 20; single; native of Ireland; was admitted on January 9, 1882. Her family history is good. She has always been healthy. Menstruation is regular. There is no history of syphilis. Five days ago, without any unusual exposure, she had a severe pain in the left chest, followed by a slight chill and fever. She continued to work until the next day, when she became so weak and short of breath that she had to go to bed. On admission, there was fever, frequent respiration, and pain in the left side. The left side was dull when percussed, the vocal fremitus and respiratory movement diminished. The respiratory sound was diminished over the left base, and the vocal resonance was slightly ægophonic in character. In the erect position the chest is hyper-resonant beneath the clavicle on the left side. The tongue is coated and moist. Examination of the urine gives negative results."

Those of you who have seen other cases of this kind have probably already come to the conclusion that this is a case of pleurisy with effusion. The disease began with severe pain in the left side, followed by some difficulty in respiration. This pain at once draws our attention to the pleural membrane. If we have pain and fever coming on suddenly, especially after exposure, we may generally conclude that there is pleurisy; but these symptoms may depend on other causes. Pain alone is often caused by rheumatism or neuralgia of the chest-walls; but neither of these affections is usually accompanied by much fever. On admission, her temperature was 102°; this morning and last evening,

102.5°. She has a pulse of 87 in the minute. The respirations number 24. You observe that, while the respirations are somewhat increased, the alteration of the pulse-respiration ratio is not very great. You recollect that in a previous lecture I told you that in pneumonia the alteration of the pulse-respiration ratio is very marked. We have, then, pain, fever, and a slight increase in the respirations, but without any marked disturbance of the pulse-respiration ratio.

The tongue is furred, but it is moist, and the coating is white. When I saw this patient in the reception-room, her appearance seemed to me to indicate that she was suffering from fever. She had the typhoid expression, which was probably because she was tired, and her tongue was tremulous when protruded. These symptoms have disappeared. Pleurisy may, however, sometimes complicate typhoid fever: therefore do not be satisfied with the diagnosis of pleurisy if there are symptoms indicating the existence of typhoid fever.

In the first place, I shall examine the patient by inspection, to see whether or not there is a difference in the amount of movement on the two sides. I do not perceive any by the eye. Placing my hands on the chest, I think there is more movement on the right side than on the left, but it is not so marked as you will often find it. The amount of effusion is not sufficient to cause much change in the respiration, but it is large enough to give rise to an alteration in the percussion-note. In striking the back of the chest with the palm of my hand, you notice that there is dulness on the left side and resonance on the right. Observe, however, that the dulness does not extend very high up, and that above the spine of the left scapula the chest is somewhat hyper-resonant. On auscultation, I find at the base of the left chest that the respiration-murmur is very indistinct, and has a slightly blowing character. In other words, the sound is diminished because we have the lung separated from the chest-wall by the intervention of liquid, which by compressing the lung gives rise to this blowing or bronchial respiration. When she speaks, I feel no fremitus at the base of the left lung. It is also very indistinct on the right side. This is owing to the fact that the woman has a voice not easily transmitted in this way. The vocal resonance on the left side is rather ægophonic in character, —*i.e.*, it resembles the bleating of a goat.

At the upper part of the left chest the signs obtained by auscultation are different. The respiration is less blowing, and we have added a slight creaking sound, due to the surfaces of the roughened pleural membrane coming together. At the apex the sounds are nearly normal, slightly more blowing than in health, and supplemental in character.

I shall be able to show you, I think, a difference in the percussion-note in the left infra-clavicular region when the patient lies down. You perceive that there is more resonance in the recumbent position. This is due to the gravitation of the liquid to the posterior part of the chest, which brings the lungs in contact with the anterior wall of the chest. The sound is more tympanitic on the left than on the right side. This is a constant observation in pleurisy when the effusion does not fill the whole chest, and where some portion of the lung is capable of containing air.

We have now made out very clearly the presence of pleurisy with effusion, and it remains to prescribe. When admitted, the patient was suffering from high fever. The temperature was 102°, and it has since gone up to 102.5°. The resident physician therefore placed her on large doses of quinine (eight to ten grains in the course of the day). After this has been continued for a few days, I think that it will be well, especially if the temperature has gone down, to place the patient on Basham's mixture, which is a preparation of iron having diuretic properties. At the present time she is taking, in addition to the quinine, digitalis and a small amount of opium. The effusion has become a little greater, and the temperature continues high: the antipyretic treatment is therefore still proper.

In regard to the prognosis in such a case as this, it is perfectly favorable. Under appropriate treatment such cases always do well. In this patient there is no previous disease to embarrass the prognosis; but if, as in the next case, we have an old phthisis to contend with, the prognosis is much more unfavorable.

PLEURISY COMPLICATING PHTHISIS.

This is a case of greater severity, and is also complicated in the way of which I have spoken. The patient has been in the

house six weeks. You will see from these temperature-sheets that she has been the subject of high temperature at all times: very rarely has the temperature gone down to normal, and only on a few occasions below normal. The evening temperature is almost always higher than that of the morning. There are very few exceptions to this general rule. We have, therefore, some hectic symptoms, superadded to those present when you last saw her. This patient had a much larger effusion than the one who has just gone out. You notice that there is marked difference in the percussion-note on the two sides. On the left side it is very dull. Still, there is a little resonance where before there was absolutely none. I find also that the fremitus is more distinct than it was before. The friction-sound, which when you last saw her was heard only at the upper part of the chest, is now heard farther towards the base. I hear it distinctly down as far as the lower angle of the scapula. The voice is somewhat ægophonic in character: it is also a little hoarse, as she is the subject of a slight degree of laryngitis. The vocal fremitus is more marked than in the other case, simply because the voice is better calculated to produce it. In this patient also you notice that under the left clavicle the sound developed by percussion is hyper-resonant.

At a previous lecture I told you that pleurisy with effusion was not the only lesion present in this case. I said that there were certain signs which indicated graver lesions; that at the right apex anteriorly and posteriorly there were heard dry, crackling râles. These are signs of commencing softening. On the left side there are signs of a similar character. If we had no pleurisy we should attribute them also to softening, but, as it is, we are in a little doubt whether they are friction-sounds or due to softening. At the right apex I have no doubt that there is softening.

In this case the prognosis is not nearly so favorable as in the previous one. We have a maintenance of the high temperature and all the other symptoms, indicating grave constitutional disturbance, with decrease in the amount of effusion. The percussion is less dull, resonance is more distinct, and the friction-sounds are heard lower down. These indicate that the effusion is undergoing absorption.

But some of you may ask me, "Is it not more probable that the hectic symptoms are due to the character of the effusion than to the disease of the lungs?" You are probably well aware that as long as the fluid is serous there are generally no serious constitutional symptoms, but that if the effusion becomes purulent, symptoms of hectic fever are developed. I do not think that in this case the hectic symptoms are due to purulent effusion. In the first place, we have positive signs of disease of the lungs; in the second place, we should not be likely to have absorption of the liquid if the effusion had become purulent. The correctness of this view is also indicated by the history. She had been wasting and losing flesh before she was taken sick with the pleurisy. Moreover, the laryngeal symptoms point in the same direction.

We have in this case, without doubt, pleurisy with effusion supervening on disease of the lung. Nothing is more likely to give rise to pleurisy. There is scarcely a case of phthisis which runs its course without being complicated with it. You can readily understand why this is so. There is more or less inflammation of the lung, which may extend to the surface, and thus cause inflammation of the pleura; and pleurisy with effusion is not infrequent. It has been maintained by some writers that a certain amount of effusion retards the development of tubercles.

This patient, of course, requires a different treatment from that employed in the previous case. When we had a large amount of effusion, I gave her digitalis and the mixture for which I have given you the prescription:

℞ Tinct. ferri chlorid.,
Acid. acet. dil., āā, f℥iss;
Curaçoæ, f℥ss;
Liq. ammoniæ acetat., q. s. ut ft. f℥vi.
M S.—F℥ss every three hours.

It is now necessary to pay more regard to the constitutional disease under which she is laboring. It is therefore proper, notwithstanding the fever, to place her upon cod-liver oil, tonics, and remedies of this class. We have here a wasting disease which is better met by cod-liver oil than by any other remedy. We also have great anæmia. It is, perhaps, not as great as when you last saw her. We may, therefore, give with advantage a certain amount of iron. The anæmia is indicated not

only by the appearance of the patient, but also by the presence of an anæmic murmur which is heard at the base of the heart. A systolic murmur heard at the base of the heart is an almost positive indication of anæmia.

[The patient was now removed.]

I did not wish to say much in regard to the prognosis in the presence of the patient. It is, of course, very unfavorable. The patient is losing strength, still exhibits high fever, and there is every reason to believe that the disease of the lung will undergo rapid development. There has certainly been enough time during the six weeks that she has been in the hospital to have effected some improvement, if any were to be effected.

This case affords an example of the advantage of delaying the operation of tapping the chest. When she was admitted, the chest was full of liquid, and the propriety of removing it by the operation of paracentesis was duly considered; but, as there was no serious embarrassment of the respiration, I decided to place her on the remedies I have mentioned. Under this treatment the effusion has diminished at least one-half.

TRANSLATIONS.

THE TREATMENT OF DIPHTHERIA BY THE CONTINUOUS SPRAY.—Dr. Jacubasch reports from the Kinder-Klinik der Charité some interesting results of the use of medicated vapor in the local treatment of diphtheria during a recent epidemic (*Berl. Klin. Woch.*, May 29). He does not employ the ordinary atomizers, but a spray-producer with a capacity of about three litres of water, which is heated by a gas-jet. A special room was set apart for the inhalation, and when the apparatus was put in action it filled the room with an impenetrable mist in a very brief time; this atmosphere was breathed on the average for about six days, and apparently with good result. A one-per-cent. solution of alum was generally used in the atomizer. Altogether, thirty-one children, three suffering with croup, twelve with idiopathic and sixteen with scarlatinal diphtheritis, were treated in this series of cases, of whom seventeen died; but it is to be observed in explanation of the mortality that it in reality is small, on account of the malignant character of the epidemic and the bad condition of the cases sent to the hospital. Thirty-three other cases, admitted during the same period, were treated in the usual method without the spray: of these all the cases (four) of croup died, of idiopathic diphtheria six, and of scarlatinal diphtheria eleven, or, in all, twenty-one deaths.

In addition to the special treatment, the internal administration of quinia, or decoction of calisaya, is considered essential, with good food and wine. Cold baths are condemned, but lukewarm baths (20° to 25° R.) are often of great service in reducing restlessness and high temperature. Tracheotomy was successfully performed under the spray, and antiseptics are recommended to dress the wound subsequently, the canula being removed on the fourth day, but reinserted at night for a short time longer. The success of the treatment given by the author is illustrated by the notes of several cases in the paper. No bad effects were noticed.

A CASE OF EPISPADIAS IN THE FEMALE.—Dr. R. Frommel (*Zeitschrift für Geburt u. Gyn.*, vii. p. 430) describes a case operated on by Schröder, which differs from the previously reported cases in that a small piece of the urethra was preserved; also a small and imperfectly acting sphincter muscle was found, and a posterior urethral wall, or, more correctly speaking, the mucous membrane for it, was met with. From the mons veneris a trough-like furrow ran from the top of the vulvar opening to the opening of the urethra. Labia majora and minora were separated widely above, and the clitoris also was split into two halves. The case was 26 years old, and since her confinement had suffered from a prolapse of the anterior vaginal wall. She was operated upon by anterior colporraphy, and then the epispadias was cured by freshening the tissue, over a triangular-shaped surface, and bringing the two sides together with thread. The point of the triangle lay on the mons veneris, the two other angles in the two halves of the clitoris. From the base the front part of the urethra was built up, just as in the stitching of the rectum in perineorraphy; and by the approximation of the two sides of the triangle the gaping furrow above the urethra was closed. Union occurred by first intention; and the result is described as being a very good one. —*Centralb. für Med. Wissen.*, No. 21.

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, JULY 1, 1882.

EDITORIAL.

PROTECTION OF THE INSANE, OR OF THE SANE?

IF ever fate should require us to define the nineteenth century in four words, we should note it as The Age of Societies. From Czar-destroying Muscovite to the pious American, the rage for union is triumphant; from red-handed communism to Bible-distribution, every possible wish, thought, or hope of the human race seems to have its association. Therefore are we not surprised at the "Proceedings of the National Association for the Protection of the Insane," which has recently been put upon our book-table. Reporters, disguised, forcing their way into insane hospitals in order to make a sensation and earn their penny a line, lawyers overbrimming in court with philanthropic eloquence concerning the sufferings of some client not too insane or too impecunious to recognize the golden springs that move legal emotion to its centre, learned judges on their benches, newspaper editors in search of a sensation, and doctors eager for notoriety and fees, have made such a din that a quiet voice asking for protection of the sane is not to be heard; and, as there is no taint of consulting visits or legal processes upon the breezes that blow from such quarters, we suppose it will not be possible to have a flourishing society to protect the sane against the insane; but assuredly the sane suffer more from the insane than do the insane from the sane.

Sitting in court the other day, we saw an old man with face scarred and furrowed as a tree torn and blasted with lightning: one eye gone, health ruined, a victim of the insane,—of the vitriol-man. Picking up the newspaper this morning, the first paragraph gave account of the murder of a family by their crazed mother. Going into a patient's house, the story was told us of the whole family life ruined by the doings of a member really insane, but not yet quite insane enough for the law to step in,—of a daily martyrdom by worry beyond endurance and constant terror of disgrace.

Is there any of our readers who has not seen, time and again, instances like these? Are not the papers and the courts full of them? The nearest friends of the vitriol-thrower had been warned by physicians that the father was insane. After the throwing, the law stepped in; but that did not help the ruined victim. Legislators seem to have thought only of preserving the liberty of the insane, never the lives and hopes of the sane.

We have not written these words in any spirit of opposition to this National Association, but to call attention to the fact that the insane at present probably inflict more injury upon the sane than the sane do upon them, and that such an association should use any influence it may have to secure laws which should benefit both sane and insane. Assuredly, when a person is really insane and in law not responsible, the law should hold some one responsible that this person is so guarded and watched that the community shall not suffer.

The name of the present association is a most unfortunate one: it does what probably it was meant to do,—minister to the public notion that the insane are an oppressed class, ill treated in asylums, and often preyed upon by designing friends who find readily tools in the profession for nefarious work; whereas the truth is that physicians in charge of insane asylums, and physicians who give certificates, almost without exception are both able and honest men; and it is little less than an outrage that any physicians should try to climb into power or wealth over the shoulders of these men by the cruel hooks of a public prejudice.

We think almost every one not connected with the National Association of Insane Hospital Superintendents will agree with the opinion that that body has been too exclusive, too much set apart by its own action from the rest of the profession, and, like all crystallized bodies, even though pure, too fixed and unchangeable; but this new body is not one whit better than, if it be as good as, the older association. The hospital superintendent subserves his own interest in defending the hospital system, and the specialist outside, braying against the system, subserves his interest just as much. The superintendent has the cake, and, like enough, wishes to keep it, but the outside boy wants a share of the cake. Weekly well-paid visits, consulting fees, *et id hoc omne genus*, have no terrors for him. Let us, however, look at the matter differently, and believe that both sets of men are acting from honest conviction. Out of the discussion probably the interest of the community will be served, but, meanwhile, it behooves the combatants to say naught about the self-interest of the other side.

The contents of this little volume show that there is need of a stirring up of the subject. Thus, the fact that the average cost of building per patient in our insane hospitals is $1253, and of yearly maintenance, exclusive of interest, $260.65, taken in conjunction with the universal insufficiency of accommodation, shows clearly the necessity of finding some way of substituting or supplementing our present palatial system; and the State that first founds a Gheel colony will make a most important experiment.

We trust good may come from the present agitation; but the good would have come more easily if the younger body had not taken such an absurdly antagonistic position, and had adopted some such name as—An Association for Promoting the Proper Legal Enactments concerning the Insane.

THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

THE Fourth Annual Congress of the American Laryngological Association, one of the most active of our special organizations, was held in Boston from June 12 to 14 inclusive. The programme of exercises comprised a number of essays by some of the leading laryngologists of the country. Of this city, Dr. Harrison Allen contributed an important paper on "Pharyngeal Irritation," and Dr. Carl Seiler introduced the discussion "On the Nature and Forms of Laryngeal Ulcer, specially the so-called Catarrhal Ulcer." New York was well represented by Dr. Louis Elsberg, who read an instructive communication "On Paralysis of the Laryngeal Muscles;" Dr. D. Bryson Delavan presented one "On the Question of Hypertrophy of the Osseous Structure of the Turbinated Bones, Practically Considered;" and Dr. William C Jarvis described a new operation for the removal of the deviated septum in nasal stenosis. Perhaps one of the best essays was that by Dr. Beverley Robinson "On Impaired Cardiac Power as an Efficient Cause of Congestive Affections of the Throat;" while the most interesting case reported was one of ossification of the right arytenoid cartilage, with separation and expulsion, following thyrotomy for the removal of a papilloma, by Clinton Wagner, M.D., the specimen from which was exhibited. Dr. Frank H. Bosworth opened the discussion on "Ozæna: its Pathology and Treatment;" and Dr. J. O. Roe, of Rochester, inaugurated that upon "The Utility or Non-Utility of Local Applications in Chronic Catarrhal Laryngitis." The West was also well represented by a clinical paper by William H. Daly, M.D., of Pittsburg, who reported several instances of "Catarrh involving the Antrum of Highmore, and its Treatment." Dr. William C. Glasgow, of St. Louis, sent a paper on Laryngeal Asthma, which was read by Dr. Seiler; Dr. E. Fletcher In-

gals, of Chicago, presented a good paper in which he considered "Deflection of the Septum Narium from a Clinical Stand-Point;" and Dr. E. Shurley, of Detroit, reported several cases of "Lupoid Ulceration of the Nasal Septum," in which amelioration followed the adoption of an antisyphilitic plan of treatment. The courtesy of the Committee of Arrangements was not only manifest in their hospitality to their guests, but also was evident in the programme, the Bostonians refraining from occupying the time of the meeting, except by a brief address of welcome from Dr. S. W. Langmaid, who also, by request, opened the discussion "On the Singing Voice: its Physiology, Pathology, and Treatment;" and by the annual address by the President, Dr. Frederick I. Knight, who also exhibited a very instructive case of aphonia spastica before the Association. Dr. French, of Brooklyn, showed some photographs of the living human larynx, and described his method of obtaining them; and some original instruments were displayed and explained by Drs. Rumbold, De Blois, and Shurley. Two daily sessions were held, except on the third day: they were well attended, and the discussions were spirited and instructive.

The entertainments, although not so pretentious as to take precedence of the scientific work of the Congress, to which a tendency unfortunately exists in such organizations, appear to have been thoroughly enjoyable and satisfactory. The President, Dr. Knight, gave a reception at his house, where the Association met the Faculty of Harvard College and the hospital staffs of the Massachusetts General and City Hospitals; the Association was entertained at luncheon by Drs. Knight and Hooper, and the annual dinner was given at the Parker House June 13. The next day the Association was the guest of the Massachusetts State Medical Society at its annual dinner at the Music Hall, where nearly eight hundred sat down at table.

Dr. Lefferts, who has served the Association most faithfully for the last four years as Secretary, was elected President for the ensuing year,—a well-deserved honor. The next meeting will be held in New York, on the third Monday of June, 1883.

CORRESPONDENCE.

LONDON LETTER.

CONSIDERABLE disappointment has been experienced by the profession lately that amidst the creation of baronetcies and the lesser title of knight it has had no share. This is only a part of the snubbing to which the medical profession should now be quite accustomed in this country. A knighthood for the retiring President of the Royal College of Physicians! Surely it is quite enough for him, when the two Sheriffs of London were only made knights in consequence of the Queen's visit recently to Epping Forest,—the Lord-Mayor having been made a baronet. Truly, the profession does not look for baronetcies for many of its members; for the profits of medicine do not place its followers on a level with successful brewers, biscuit-makers, and owners of wharves along the Thames. Ireland is specially left out in the cold. Some of its leading medical luminaries with "handles" to their names have recently gone over to the majority, and there are many men in the profession in Dublin who might be invested with knighthood with advantage. As to the present government, it seems not only disinclined to do honor to the profession, but even disposed to practically lay a fine upon it. Thus, when in the last Budget a small sum was required to make ends meet, it was proposed to increase the tax upon "carriages." No doubt this was a "shot" on the part of the radical elements at their antagonists the landed proprietors, who are universally impoverished by a succession of bad harvests (indeed, ever since the Americans took the weather in hand, as some of the farmers here firmly believe is the case); but, at the same time, it becomes a decided hardship upon the medical profession, many of whom must keep a brougham in order to have a practice. Without the doctor's carriage at the door, a large number of patients would scarcely see the necessity for the visits of its owner. "If I were to put down my carriage, I might as well retire from practice!" said a member of the profession to me the other day; and a very cosey, elegant carriage it was, with a pair of beautiful high-bred

chestnut horses in it,—quite a match for the handsome, gentlemanly doctor himself. So it is in all large towns, and in many smaller ones for that matter: the doctor's carriage is part of his stock in trade. It tells of increasing practice, and so is often started before it is very clear how the horses are going to be fed. Then it vouches for the reputation of the pleasant-looking old gentleman who sticks to practice when there is no particular reason why he should remain in harness, except that he likes it, and his patients like him, and are glad to see him, even if it is possible that the old gentleman's hearing is not quite so good as it once was, and that his examination of the chest is rather a matter of form than anything else,—but an "echo" of what once was a definite sound. Nevertheless, the well-kept carriage is a guarantee that their old friend is still hale and in harness. But this government, among its tentative tendencies, is putting a fine on the medical profession, which, however, is rather a grievance than a solid injury in many cases. If the profession were welded together into an homogeneous whole, so as to vote solidly at election-time, then the political wire-pullers would court it, and honors would fall upon it "thick as leaves in Vallombrosa." Of course the Irish question takes up a great deal of the time and consumes all the leisure of the Cabinet; but no one can be a better judge of the value of medical aid than Mr. Gladstone, who so frequently has Dr. Andrew Clark in attendance upon him. And no fitter man to be a baronet than this said Dr. Andrew Clark, who is a hard-headed, shrewd Aberdonian, canny, wide awake, a good speaker, clear, rational, solid in his arguments, put in well-chosen language, if there be no attempt made at eloquence. Long in most lucrative practice,—such practice as few men could undergo without utterly breaking down,—brought professionally in contact with our social leaders, from princes of the blood royal and the Prime Minister downward, Dr. Andrew Clark is quite as worthy—and a precious sight more so, in many people's opinion—of the honor of a baronetcy as some political nobody who has fought some constituency unsuccessfully twice "for his party" and so becomes a notable. Or the medical gentleman who watched over the last moments of the late Lord Beaconsfield,—namely, Dr. Richard Quain, F.R.S.; not the Quain of "Quain and Sharply," but the well-known fashionable physician, a keen-witted Irishman, with some of the brogue and the drollery of an Irishman about him, yet unsubdued by the sobering cares and anxieties of a large—indeed, very extensive—practice for years. Perhaps some of us did think it would have been as well if the dying minister had been treated as a less distinguished individual would have been,—viz., left to his own devices, and, if he preferred homœopathy, allowed to take the treatment of his choice. Nevertheless, Dr. Quain is an able and enthusiastic physician, full of therapeutics, and a practical rebuke to the scepticism which prevails in many quarters. Indeed, he is just bringing out a dictionary of medicine, contributed to by many of the best-known members of the profession, but all strictly supervised by himself; and it is not a common thing to find a man who has attained Dr. Quain's position, a man whose means are ample enough for any honor in the way of a title,—that is, such a title as is open to medicine,—that will bring such an experience as his to the aid of the profession by undertaking literary work, when a well-earned leisure would seem more likely to be the object of his desires: not, however, that the hale, hearty, genial old doctor shows any sign of failing yet.

Nor do we wish to see any more of our well-known leaders disappear at present. Two more prominent figures have passed away—Dr. Peacock, and Prof. Spence, of Edinburgh, surgeon-in-ordinary to the Queen for Scotland—only within the last few days. Thomas Bevill Peacock was a member of the Society of Friends, commonly known as Quakers, which has furnished so many illustrious members to our profession. In early years Dr. Peacock was an assistant to Dr. John Fothergill, of Darlington, the first temperance doctor. There he learned in general practice the beginning of that knowledge which was to fit him for the future position of a large city consultant as time elaborated it. Early in life he became connected with St. Thomas's Hospital, and ultimately died in it as a consulting physician. He had a paralytic stroke a year or two ago, from which he had to a large extent recovered, though there were evidences of cerebral impairment remaining. Last week he was showing some friends round the hospital, when another seizure took him. He was put to bed in the institution, and in a few hours he expired, without any attempt at rallying. Curiously, the deceased gentleman had often expressed a wish that he might die in St. Thomas's Hospital or another with which he was connected; and his wish was granted. The other hospital is that of The City of London Hospital for Diseases of the Chest (Victoria Park), of which he was the promoter, and in which he ever took the liveliest interest. Dr. Peacock made a great study of the malformations of the heart, and was the authority on the subject. Acute, painstaking, calm, cold even, he was a typical "sense-machine for registering observations," and with the utmost accuracy, too. Unemotional, he had no theories to which he bent his facts; all he sought for was the fact itself. He did not publish many works by comparison with his accumulated material; but everything he has published is of the highest value; and he has carried with him a huge amount of information which I,

for one, sincerely wish he had left on record,—not only in pathological observations, for which he was well known, and received lately the gold medal of the Royal College of Surgery, as a careful, painstaking searcher after information, but also in clinical medicine. Those who have taken notes for him have declared to me their perennial surprise at the justness of his diagnosis, when he would dictate in his stiff, formal tones, "and a murmur is to be heard at the left apex,—*of a temporary character*." How he knew it was of a "temporary character" they said they never could tell, and often had questionings; but, sure enough, after a little time it would disappear. Perhaps his material is in such a form that it can be edited by some one: of its value there can exist no doubt. As to his absolute rectitude, those who knew him well can tell best. He did some years ago what I fear few, if any other, in like position would have done: he actually promoted the election of a man as his colleague whose views were diametrically opposed to his own. The old doctor was one of the last survivors, if not absolutely the last, of those who believed that digitalis lowered the action of the heart,—that is, the last of those who may fairly be supposed to have known enough about the subject to entitle them to an opinion on it. How he came to retain such an opinion, taught in his student days, and perhaps since by those who write books in which they repeat the errors of other book-writers, it is difficult to see; but he adhered to it till the last. Yet, when I applied to him in connection with a vacant post at Victoria Park Hospital, he cordially supported me. Indeed, on the publication of my prize essay on digitalis, he wrote me spontaneously a most kindly letter, though a stranger to me, and though he never adopted my conclusions. Good, upright, inflexible, the old doctor lived with few friends and with fewer associates. Utterly just, if not always as amiable as a pastor's maiden sister, he was thoroughly respected by every one with whom he came in contact. A small man, of preternaturally calm bearing, he was methodical and precise in all things, no matter how minute; and the London body of Friends by his death loses one of its most conspicuous members.

The other, Prof. Spence, was a well-known figure in the Northern metropolis. Long years ago Mr. Spence was Surgeon to, and Lecturer on Surgery in, the Royal Infirmary of Edinburgh, when Mr. Syme was in the height of his reputation. Steady, grave, composed, Mr. Spence was a first-rate surgeon, if not the most brilliant or, rather, showy operator. Before the days of chloroform, when the patient was secured in bonds during an operation, and when time was a very different factor in operating from what it is now, Mr. Spence was well known for the rapidity with which he executed his operations. Long before he was professor in the University, Mr. Spence was largely called in by practitioners in the neighborhood of Edinburgh, to operate on their less lucrative patients; and it used to be said that they did not always bear him in mind as they might have done when wealthier patients stood in need of the surgeon's knife. When Prof. Miller died, public opinion carried Mr. Spence into the vacant chair, despite a wonderful lot of influence put on by other candidates. When fortune once smiled upon him, the world became conscious of the merits of the unpretending surgeon, who was a little absent-minded at times. A relative gave him a gorgeous carriage-and-pair, which the professor forgot almost the first day: walking away out of the famous quadrangle of Edinburgh University across to the Infirmary, his mind was concentrated on a case or two he was about to examine, and the carriage slipped out of his recollection altogether. At last its existence flashed upon him, and, with a curt exclamation, he retraced his steps, and took his seat as became a professor of surgery and the owner of a stately vehicle. In the days of his prosperity he was got up—for no one ever dreamed that he bothered his head on the subject—in a manner strongly contrasting with his previous homely garb. His features were cast in a singularly lugubrious mould, so that the adjective used as a prefix to his name was "Dismal," though he was not mentally of a mournful nature. Every Edinburgh student will read with regret that Prof. Spence has passed away from the field of his labors. His health had been failing for some time past, and two toes were removed lately for gangrene. Pyæmia set in, with the usual result in such cases. Prof. Spence was not a voluminous writer, but, of course, had a work on surgery for his huge class. Recently he came forward as a critic of Prof. Lister's system of antiseptic surgery, an account of which appeared in one of my letters at the time. He was a proficient as a lithotomist; and when I was a student some twenty years ago, it used to be said that Mr. Spence had dissected the perineum in over one thousand subjects, in order to be intimately familiar with the anatomy of the region, both normally and in all the variations of its complex parts. Indeed, it used to be a student's joke at that time: "What is Spence's idea of a future state?" one would ask; the answer being, "Why, of course, the blest cutting the damned for stone." Such was supposed to be his conception of future happiness, to be eternally engaged on his favorite operation. A medical contemporary, in speaking of Mr. Spence's illness, and of the tardy recognition of his surgical merits by Her Majesty's advisers, goes on to say, "Prof. Spence's reputation is so world wide that we need not refer to it; but we would ask whether, had he been the subject of some Continental sovereign, his undoubted claims to public recognition would have been thus passed over. If a city trades-

man happens to be Lord-Mayor or Sheriff at the time a recreation-ground or a new bridge is opened, a baronetcy or a knighthood is immediately bestowed, notwithstanding there is no pretension to a claim for the honor; but the medical man, whose scientific attainments, discoveries, or operations have obtained for him the just admiration of all peoples, is passed unhonored by the sovereign whose country's fame he has done so much to enhance."

Though not standing on a surgical pinnacle like the late Mr. Syme, Prof. Spence would have been deemed worthy of honor on the Continent; and seeing how much of her time, even in the midst of a troubled session, Her Majesty finds it agreeable to spend away from the neighborhood of town, and in Scotland, it is not to be wondered at if our contemporary thinks the late professor was overlooked in not being knighted when made surgeon-in-ordinary to the Queen for Scotland. Probably Mr. Spence would have been the last man to have cared a jot about a handle to his name: still, there is the profession to be thought about, or, rather, it seems, to be overlooked, except to have a necessary part of its stock in trade taxed extra when the kingdom needs a little more money. Some might, however, say that the profession does not go particularly wisely about its own affairs and its own internal management; and though, of course, those who are largely responsible for the conduction of affairs would resent such imputation, still, in this time and generation, we do not hold that "grace gives dominion" to the extent that once obtained; and there are those who are heretical enough to suspect that some of the respectable mediocrities who have climbed by arts best known to themselves into many positions of responsibility might be profitably exchanged for others whose merits are—well, at least more generally known.

J. Milner Fothergill.

PROCEEDINGS OF SOCIETIES.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

A CONVERSATIONAL meeting of the Society was held at the hall of the Society, Philadelphia, February 22, 1882, Dr. Horace Y. Evans, President, in the chair. Dr. Arthur V. Meigs read a paper on "Milk Analysis" (see page 660).

DISCUSSION.

Dr. Ellwood Wilson said he was not prepared to pass any opinion on the chemical points brought out in the paper. As far as regards substitutes for the milk of the mother, he preferred condensed milk.

Dr. A. H. Smith said he had no doubt of the accuracy of Dr. Meigs's process. The results accorded with practical experience better than others; but, in reference to the identity of the casein in cow's milk and human milk, he could not agree with the lecturer that the difference in the coagulation, both in kind and degree, under the influence of conditions of the stomach or in the presence of certain chemical agents, was explainable by the different degree of dilution of the casein, there being a larger proportion of water to that of casein in the human than in cow's milk. If cow's milk is diluted with water, or any diluent which will not interfere mechanically with the kind or amount of coagulation, it will produce in the infant's stomach the same coagulation, in extent and firmness of clot, as when we use the undiluted milk, while the mother's milk will never give such a coagulum under any circumstances. This fact could only be explained on the supposition of some difference existing in the constitution of the casein. He agreed with Dr. Ellwood Wilson as to the value of condensed milk when the mother's milk is not available. In a considerable proportion of cases children thrive and develop perfectly under its use. In reference to the objection to the amount of sugar, this applied only to the canned article, and not to that which was sold in the larger cities, which is condensed to about one-quarter its bulk, and, with the addition of salt, will keep for several days without the addition of sugar. With this article Dr. Smith had obtained excellent results. No one form of artificial diet, however, would suit all children, and there seemed to be no article of food which some children could not thrive on. He recalled a case in which a child was from necessity taken to Florida at three weeks of age, and, from an impossibility to get any good milk, it was fed for over ten months from that age exclusively on oatmeal gruel made with water, and it remained in good health, robust and vigorous.

Dr. W. T. Taylor said he could corroborate the statement of Dr. Smith in reference to the use of other foods than milk. Some years ago he had attended a woman with two or three children, who could not suckle them, and was obliged to feed them on cow's milk and other aliment, for condensed milk was then unknown. Sick stomach and diarrhœa would soon set in, and they would waste and die. Accordingly, when the next child was born, Dr. Taylor had it fed on oatmeal boiled in water and sweetened, which agreed with it so well that it thrived until it was old enough to take other food.

Dr. J. Forsyth Meigs said that he had never seen a young infant do well on food which did not contain milk or some other animal substance. The few he had seen fed upon oatmeal or arrow-root alone were puny and miserable creatures.

Dr. O'Hara thought if strict dependence were to be placed on the milk analysis, it

should be accompanied by a statement of the constitutional peculiarity of the individual, whether lean or fat, whether taken from a primipara, etc. He had no doubt that the milk of women varies much, and human milk can bear no comparison with that of a cow. Many things alter the milk of a woman that could not affect the cow. Emotion had been known to render a woman's milk poisonous to the offspring, and this could not occur in the case of the cow. If a woman was putting much fat on herself, it could not be expected that she would be giving much of it out in her milk. Can we in any way estimate a typical woman who ought to average a normal quantity and quality of milk?

Dr. Blackwood said that he had seen a number of instances in which children thrived on oatmeal gruel. In his own practice he had one or more such cases each year. In diluting cow's milk he preferred to use whey instead of water. He desired to know Dr. Meigs's opinion in reference to the use of milk from one cow. Mothers often boast that they have a guarantee that the milk furnished is from a single cow; but, in his opinion, this is a disadvantage rather than otherwise. The milk of one cow is more subject to variations than the milk of a herd, and disease in one animal would, of course, affect less seriously the milk of the whole herd than it would the milk of the sick animal itself. Barley-water forms an excellent medium for diluting milk, as it prevents better than any other article the tendency to coagulation in large masses.

Dr. F. P. Henry said that Dr. O'Hara's question as to the type of woman from whom the milk examined by Dr. Meigs had been taken might well be supplemented by a question as to the type of animal from which the cow's milk was procured. Cow's milk may vary, as regards the amount of fat, from five to twenty-five per cent. About a year ago he had made a large number of observations upon milk by means of the hæmacytometer, and had found that a milk containing two million globules per cubic millimetre was of excellent quality. Such a specimen, examined by means of the graduated cylinder, showed from seven to ten per cent. of cream. Dr. Henry had argued, in the paper referred to, that an enumeration of the milk globules was, for all practical purposes, in the case of human milk, the most valuable single method of examination; and he had as yet seen no reason to change his opinion. Dr. Meigs's method requires fifteen cubic centimetres of milk,—an amount often impossible to obtain from a woman's breast,—while for an enumeration by Dr. Henry's method only five cubic millimetres (about one drop) are required. Simon states that changes in diet affect almost exclusively the quantity of milk secreted and the percentage of butter, the percentage of casein and sugar remaining about the same. If this be so, it follows that an examination for determining the amount of fat will give a correct idea of the quality of the milk. No method can give any idea of the quantity of milk secreted. The estimation of the amount of cream by means of the graduated glass cylinder is entirely fallacious. This is readily shown by placing the same amounts of cow's and human milk in vials or tubes of equal calibre. Although the layers of cream that form may be identical, the milk below will be entirely different in appearance,—in the human specimen being almost transparent, while in that of the cow it is quite opaque. This is due to the fact that the globules of human milk are the larger, and an inference that the two specimens contained equal amounts of fat, founded upon the formation of layers of cream of equal depth, would be altogether erroneous. Probably a chemical method such as that of Dr. Meigs would determine the fat more accurately than the hæmacytometer; but it must be admitted that, so far as concerns human milk, it is in most cases impracticable.

Dr. Meigs, in closing the discussion, said that while he had made many examinations of milk, he had at present only five finished analyses of human milk to offer; and even these he did not offer as giving a final average: more must be made. The point he desired to make specially in the paper was that human milk did not contain anything like four per cent. of casein, and, further, to point out the conflicting statements as to the composition of human milk. All milk was subject to variation. If milk is taken from the mother's breast after the child has not nursed for some time, the fat will be small in amount; but after nursing, the dregs of the milk being taken will be found rich in fat. The variation may be as great as from one to nine per cent. He had not said that the casein of cow's milk was the same as that of human milk: on the contrary, he thought it not unlikely that they were different; but he did not believe that the same large, hard coagula would result from diluted cow's milk as from the undiluted, especially when lime-water was used in diluting. As to the use of farinaceous foods, he agreed with Dr. Smith that they are on occasions very useful: he did not, however, advise them; but a definite rule for the guidance of beginners, whether mothers or physicians, was still lacking. He preferred to use a mixture of milk, cream, sugar, and lime-water; but, when travelling, condensed milk may be of great value. Mixed milk was to be preferred to that from one cow. Whey, as advised by Dr. Blackwood, will probably contain some fat. As to the comparison between the chemical and the microscopical method, the latter needs further investigation to prove its entire reliability. In the chemical method the only doubtful points are the amounts of casein and sugar.

A CONVERSATIONAL meeting of the Society was held at the hall of the Society, Philadelphia, March 8, 1882, Dr. Horace Y. Evans, President, in the chair. Dr. L. S. Pilcher, of Brooklyn, read a paper on "The Ligation of Large Venous Trunks" (see page 664).

DISCUSSION ON DR. PILCHER'S PAPER.

Prof. Henry H. Smith said he had listened to the paper with interest, although he was not aware that any doubt existed among surgeons of the present day as to the advisability of ligating veins. His experience in the matter had been entirely favorable to the practice. The real difficulty to be considered was the condition of the vein, and not the mere fact of ligation. A diseased vein, *e.g.*, varicose, would be apt to give trouble under conditions in which a healthy vein would do well. As regards the ligation of large veins, he did not recall the general statistics, but remembered one case in which, during removal of a large lymphatic gland on the sheath of the vessels of the neck, the jugular vein was cut; in order to control the hemorrhage both artery and vein were included in the same ligature, and the case did well. In another instance the varicose veins of the leg were tied, and death ensued in five days. In conclusion, Dr. Smith said he had never seen so thorough an exposition of the subject as that given by the lecturer this evening.

Dr. S. W. Gross said that since the date of the publication of his papers on ligation of veins, surgeons had generally adopted the practice. Billroth states that he has lost not a few cases in consequence of not ligating the wounded axillary vein in the removal of carcinomatous axillary glands, but that since he has found that veins may be tied with impunity his results are improving. In the original papers Dr. Gross had stated that exposure of the vein was more fatal than wounding it. Dr. Pilcher had proposed to excise the denuded portion to prevent the occurrence of suppurative phlebitis, and a German surgeon, whose name he could not recall, had removed a portion of a thrombosed axillary vein with a view to the prevention of pyæmia. Dr. Gross could not endorse either of these views, since he believed that neither exposure nor ligation of a vein was dangerous when the patient was in good condition. He had not modified his opinion in regard to the ligature not being a factor in the production of diffused phlebitis. Dr. Gross desired to utter a note of warning in regard to lateral deligation, lest the successful cases referred to by Dr. Allis and Prof. Parkes should induce some of the surgeons present to imitate their practice. In the papers already alluded to he had given the details of forty-one cases of ligation of the internal jugular vein. He was now cognizant of sixty cases, inclusive of those reported this evening. Of this number forty-seven were examples of ordinary deligation, of which one terminated in death from thrombosis, while thirteen were instances of the application of a lateral ligature, of which four proved fatal from secondary hemorrhage. The freedom from hemorrhage after the ordinary procedure, and the occurrence of fatal bleeding in more than one-third of all cases after the lateral ligature, was a sufficient ground for its exclusion from practice. He did not consider that lateral forcipressure had been sufficiently tried to entitle it to the praise awarded it by Dr. Pilcher. From his own experiments he had found that the ordinary ligature partially divides the muscular coat of the vein, and there was sufficient evidence to show that in the case of arteries the catgut ligature acted on the coats of the vessels in precisely the same manner as the ordinary thread. The clot formed in the vein merely acted as a porous substance into which the proliferating endothelium of the intima grew, and it is through the proliferation of these endothelial cells that the vessel is permanently occluded, as has been experimentally demonstrated by Dr. Shakespeare. In conclusion, he stated that veins may be ligated with as much confidence as arteries.

Dr. Parkes, of Chicago, did not agree with the last speaker as to the relative merits of complete and lateral ligation. He had seen lateral ligation used in three cases of wounds of the internal jugular vein, followed by recovery in each case, while one case of complete ligation died in thirty-six hours from thrombus. Especially where the wound is small is complete ligation inadvisable. In the cases of lateral ligation he had seen, the constriction had amounted in one instance to one-third the calibre of the vessel, and in one other to nearly one-half. No untoward symptoms followed in either case.

Dr. Keen said that in a case of denudation of a vein he would not think excision required except under special conditions. He could not agree with Dr. H. H. Smith in reference to the inadvisability of operating on diseased veins. In varicose conditions he had several times exposed and ligated the veins at points an inch or more apart, and exsected the intervening portion by the antiseptic method, and with excellent results. In his opinion the ligation of varicose veins by the catgut ligature was the best treatment. He recalled the case of a night policeman whom he had cured by this method, and who was able to resume his occupation. He also used silk ligatures, whether to artery or vein, as used in abdominal surgery, not by waxing, but by dipping in carbolic acid water and cutting off short. In this manner he had first ligated the brachial artery and three muscular arteries in one operation at St. Mary's Hospital three years ago; as the case recovered, he never knew what became of the ligatures. They never gave any sign of their presence.

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Dr. Packard thought that in certain positions it was highly necessary to ligate veins. For instance, in amputations at, or close to, the knee, the vein is apt to be held open by the fibrous tissues around it, and troublesome hemorrhage may occur, or leakage ensue: here ligation is eminently proper. Ligation of veins had been attended by no bad results in his experience, whether in cases under his own care or in the hands of other surgeons. In an operation of clearing out axillary glands, the vein having been inadvertently wounded, he had used lateral ligation, reducing the vein to about one-third of its normal calibre: good results were obtained, and no œdema followed. If in removing a large tumor a vein must be long exposed, or if it should be roughly handled (although he thought there should be no rough handling), he would prefer to apply a carbolized catgut ligature at each end of the exposed part, but did not think excision needed.

Dr. Hunter said he always ligated veins when they were cut and persisted in bleeding. Dr. Agnew had ligated the internal jugular at its point of emergency from the skull. The ligature came away at the end of the second week without unfavorable symptoms. In intra-venous transfusion, Dr. Hunter always opened either the median cephalic or median basilic vein. He recalled a case of typhoid fever, in which intra-venous injection of milk had been practised, and he closed the integument over the median basilic vein with silver wire, and placed on a compress. The vein healed well in the course of three or four days, because he afterwards noticed the blood going through it. This case showed that even in debilitated conditions we might expect good union in the vein. He had never seen secondary hemorrhage from ligated veins. He preferred carbolated catgut. Chromic acid, he thought, changed the ligature, and rendered it less easily absorbed. Carbolated catgut always gives good results.

Dr. Blackwood said he had seen during the war many cases of gunshot wounds of the vessels of the neck. Most of these died of the primary hemorrhage, but at Petersburg he had occasion to see a number of cases of wounds of the external jugular soon enough to apply treatment. Whenever lateral ligation had been used, and he had been able to follow up the history of the cases, they had ended fatally from secondary hemorrhage, and finally he had abandoned lateral ligation altogether, and ligated at two points, and cut between them. He agreed with Dr. H. H. Smith that diseased veins do not bear ligation like healthy ones. He had, however, no fear in ligating veins.

Dr. Nancrede said that in removing a large lymphoma of the neck, in an operation lasting two hours, he had kept exposed for a long time the internal jugular vein. Prolonged suppuration followed the operation, and the vein was bathed in pus, but it suffered no injury. He thought that the fear felt by some surgeons that ligation of the internal jugular would interfere with the return of venous blood was founded on a wrong theory of the cerebral circulation, and that Hilton had shown long ago that the ophthalmic vein, which has no valves, and ramifies in loose cellular tissue, in addition to some smaller veins, suffices for the escape of venous blood in such efforts as straining at stool, when but little blood can be returned by the jugulars. Dr. Nancrede said he never hesitated to tie veins in operations, and would not think of leaving them untied in such operations as amputation at the hip-joint. In two such operations, amputation at the hip-joint performed by him during the past year, the hemorrhage was free, and would certainly have conduced to a rapidly fatal termination unless the femoral vein had been tied.

Dr. Allis recalled a case bearing upon the questions under discussion,—viz., the exposure of the jugular vein and its lateral ligation. In the removal of an adenoma from beneath the sterno-cleido-mastoid muscle, the sheath of the large vessels was also removed, while at the same time the vein, which dilated to the size of a man's thumb, received a wound. The hemorrhage was arrested by the application of a lateral ligature, and the recovery was rapid and permanent.

In regard to the danger of the ligature slipping and primary hemorrhage following, Dr. Allis remarked that it would depend mainly upon the manner in which it was tied. When tissues are dense, the ligature may slip off, but when soft they permit it to embed itself, and reduce the danger of primary hemorrhage to a minimum.

Dr. John B. Roberts inquired as to the extent of danger from the introduction of air into veins, which is said to be a dangerous complication of wounds of the neck. The ligation of the cerebral sinuses was also a matter upon which information should be given. He had seen some years ago a case of injury to the skull, in which one of the difficulties that the attending surgeon experienced was hemorrhage from a wound in the longitudinal sinus. He saw no reason why venous sinuses of the brain could not be ligated with as much success as ordinary veins.

Dr. Shakespeare said he had no special experience in reference to ligated veins. His experiments, to which allusion has been made, were almost entirelyupon arteries, though occasionally a vein had been included in the same ligature and the pathology of venous ligation had been shown. He saw with pleasure that Dr. Pilcher, in drawing conclusions from the experiment on the goat, had said that the union was by first intention, and was effected by adhesion of the surfaces of the inner tunic. Dr. Pilcher had said that inflammation started from the outer tunic and pro-

gressed inward, but in the case submitted it is stated that no signs of inflammation existed on the outer tissue, and the healing process was limited to the inner coat. Dr. Shakespeare's results in reference to arteries here coincided with this experiment on a vein, and showed that the elements of the inner coat were the active agents in healing, and that the clot was unnecessary and sometimes absent. He thought he had broad ground for opposing the view that white corpuscles are the active agents: when the substitution of the clot by connective tissue takes place it is due to the agency of the tunica intima. A series of granulations originated and resulted in absorption of the blood-clot. Where no clot existed, healing was by first intention, and was complete in three or four days, as in Dr. Pilcher's case. In such cases the inflammatory process was limited to the inner tunic. On one point he differed from the author of the paper. He (Dr. Shakespeare) thought that the permanent obstruction of vessels by approximation and agglutination of walls was a process of inflammation. Healing by the first intention was but an abridged form of healing by second intention, and all practical pathologists agree that it is by reparatory inflammation. As far as he could gather from the drawings shown, the magnifying power used had been too low to show either the process of inflammation or the elements of the tunic concerned.

Prof. Gross said he had long been in the habit of ligating veins, and early in his professional life was impressed with the fact that the fear of such ligations was unfounded. To place the matter in a more definite light, he had suggested to Dr. S. W. Gross the statistical investigation of the subject, and the result was the paper to which allusion had been made by the lecturer. He was opposed to lateral ligation, and thought it always best to tie the vein in its continuity. No danger of phlebitis and suppuration existed, but varicose veins he would not ligate. He was also opposed to the excision of the exposed vein, unless it could not be avoided.

Dr. Pilcher said that the discussion had shown that some of the points he had advanced had been misunderstood: first, in reference to the results of denudation, veins exhibited no especial vulnerability, and the diseased conditions they take on are generally traumatic. It was easy to imagine a case in which considerable extent of a large vein was denuded and injured so that inflammation would be unavoidable, and it might be a question whether it would not be better to apply ligatures, and excise. Dr. Packard had suggested to tie the vein at each end of the exposed portion, but not excise; but Dr. Pilcher said he objected to this because the inflammation in the neighborhood of the vein would be more likely to be carried to the distal portions, and hence develop danger, while excision itself added no danger. Secondly, where the wall of a vein had not been wounded, but it would have to lie exposed at the bottom of a suppurating cavity, and consequently in danger of progressive thrombosis and suppurative phlebitis, would it not be better to tie and remove the exposed portion at once? Cases have been reported where this has been done, and with a happy result, after trouble had developed; but he thought the better treatment was to anticipate such dangers, and excise at the time of the operation. He did not think that mere exposure or denudation is sufficient to justify ligation.

In reference to lateral ligation, two sources of danger were to be noted,—first, secondary hemorrhage, either at the timely or untimely fall of the ligature, and, second, purulent infiltration of vein-wall, followed by thrombus and its results. The latter conditions may be produced by lateral ligation only when irritative measures are used. Silk ligatures always irritate, and hence give rise to thrombus and embolism. When non-irritative means were used, thrombus and secondary hemorrhage need not be feared: hence the application of the ligature to the side-wall of the vein, as Dr. Allis had suggested, would save the venous trunk and answer well. The forceps were less irritating than the ligature. The process of healing, when forcipressure is used, does not involve ulceration, and is shorter: hence the wounds can be closed early. As to the manner in which the antiseptic animal ligature acts, the statements were as yet preliminary, and the data not sufficient to enable a final and reliable opinion to be arrived at. Dr. Gross's statement that the middle coat is broken is not in accordance with the latest investigations, which show that no tunics are ruptured in the tightest ligation.

Whether or not inflammation is a part of the process of healing may depend upon the meaning we attach to the word inflammation. Dr. Pilcher said he did not comprehend exactly in what sense Dr. Shakespeare used the term. For his own part, he had in his paper compared the healing process to certain obliterations seen in the umbilical vein, the hypogastric arteries, the ductus arteriosus, and in the interauricular septum of the heart of a young infant. These changes were not inflammatory, but were instances of union by contact.

The examinations of the sections of the ligated jugular of the goat were made by Dr. Joseph H. Hunt, of Brooklyn, under both high and low powers, upon whose judgment as to the absence of signs of inflammation the speaker relied.

In reference to the statistics of lateral ligation of large veins, he recalled two cases in the practice of others. In one the internal jugular, in the other the external iliac, was tied. Death occurred in a few days, in each case from suppurative phlebitis. The man-

ner of application of the ligature was unknown to him. The constitution of the person has much to do with the results of venous ligation. The unfavorable results are from the condition of the system, not from the operation.

As regards the propriety of ligating varicose veins, the statements made by different speakers in the course of the discussion might create doubt. It would be remembered that largely to the frequency of disastrous results following the ligation of such veins—a practice much in vogue in the early part of the present century—was due the odium into which venous ligature had fallen. But all these disasters had occurred after the use of irritating ligatures.

PHILADELPHIA ACADEMY OF SURGERY.

Meeting of May 1, 1882.

The President, Dr. S. D. Gross, in the chair.

Dr. Morton exhibited an entire breech-pin of a rifle, and the screw, which had been removed from the face of a lad aged 20, by Dr. John Rhea Barton, in 1832. The gun burst while being directed upward and held close to the right side of the face. The lad was thrown down, and, with the exception of a small wound below the right eye and to the inner side of the infraorbital foramen, there was no other injury. The only part of the gun which was missing was the breech-pin and screw. A probe detected the screw only, and far beneath the surface. Dr. Barton, believing that the entire breech-pin was embedded, from the fact that the screw was detected, increased the size of the wound, and with great difficulty extracted the mass, which consisted of the breech-pin and screw entire. It measures two and one-half inches in length and an inch in breadth; the screw is two inches long; the entire weight, one and one-half ounces. The patient made a rapid recovery, and at this time—fifty years since the accident—shows scarcely any scar or other change from the fracture and loss of part of the maxillary bone.

Dr. Nancrede related a case of a young man under his care at the Protestant Episcopal Hospital, who had accidentally shot himself through the right mastoid process, producing a wound which had, either primarily or secondarily, opened into the lateral sinus; for at the post-mortem examination the ball had rolled out of its interior. There were neither symptoms of concussion nor much hemorrhage. In examining the wound with the probe, both from the direction of the track of the ball and the rather free venous oozing which followed the withdrawal of the instrument, Dr. Nancrede had suggested the probability of a wound of the lateral sinus. Profuse suppuration ensuing, with marked meningeal irritation and heavy chills, the bone was trephined, in hopes of affording freer exit for the discharge. A portion of the ball was found between the soft part and the bone. A temporary improvement ensued, only to be followed by other distinctly pyæmic paroxysms, ending in death on the seventeenth day. A small secondary dépôt was found in the left lung, and the right lateral sinus was partly filled with ante-mortem and completely with post-mortem clot. Whether the ball actually penetrated the sinus-wall at first, or only lay between it and the bone, ulcerating secondarily into the canal, cannot be told; but Dr. Nancrede thought that it had originally wounded the vessel.

Dr. Nancrede also presented a specimen of the superficial femoral artery, where the internal and middle coats of the vessel had been turned down and invaginated completely, occluding its lumen. The appearances presented were so similar to that figured by Dr. Speer, of Brooklyn, as produced by his artery constrictor, that Dr. Nancrede thought the specimen would prove interesting to the members. It had been removed from the left thigh of a young Swedish sailor whose limb had been crushed and pulpified by having a hawser wound round it by a tug-boat moving at a high rate of speed. The skin was opened only at one point; but the occlusion of the artery, with the crushing of all the structures of the thigh high up, had induced Dr. Nancrede to perform an amputation at the hip-joint. The patient rallied well from the operation, but eventually died on the third day, of spreading gangrene of the flaps.

Dr. Allis presented a case of gunshot injury. A young man, about 20 years of age, while handling his shot-gun,—the muzzle being near his arm,—received by an accidental discharge the entire load just above the elbow. The load entered the front and outer aspect of the arm, and escaped on the outer and posterior aspect, shattering the humerus, but leaving the large vessels and nerves uninjured. It was hard to conceive how the radial (musculo-spinal) escaped; but only a slight loss of sensation and power followed the injury in the course of this nerve. The immediate treatment was to combat the inflammation. Dr. Allis saw the case about a month after the injury. There were many large fragments of bone still to remove, and the sharp ends of the upper and lower fragments to resect. When this was accomplished, there was a gap of three inches; and, as the lower fragment was only about an inch long, the prognosis of a useful joint was not favorable. The wounds healed kindly after the resection, the ends of the bone united, the joint resumed its function, and the man is now quite as well able to make a living at his trade as before the injury.

Dr. Morton asked the question as to the proximity of the gun to the arm at the time of

the discharge, as, from the character of the wound, the load seems to have gone through as a single body. The patient replied that the muzzle was about six inches off, and that during the treatment eighty-three grains of shot were taken out, etc.

Dr. Mears asked Dr. Morton the practice of the Pennsylvania Hospital as to amputations and resections in gunshot and other injuries of the elbow-joint. Dr. Morton replied that in gunshot wounds the practice was to resect whenever the main artery and nerves were uninjured; but in compound fractures from heavily-loaded wagons or railroad accidents the rule was to amputate when the bony and soft parts alike were more or less involved.

Dr. Allis related a case of sabre injury to the front part of the elbow-joint, in which the median nerve was severed. A resection was some months later successfully performed by Dr. Moore, of Rochester. There was, however, no regeneration of nerve-power. The entire limb became atrophied and an encumbrance, and, at the request of the patient, Dr. Allis amputated just above the elbow. The injury to nerves as well as to vessels should, he thought, be considered in all attempts at conservative surgery.

Dr. Hunt then introduced the subject of the open dressing of wounds.

"The cardinal principle involved," said he, "is that of preventing suppurative fever, and this object is best attained, as will be shown, by leaving the stump entirely open, thus allowing of free and continuous drainage. The method of Dr. J. R. Wood is about as follows. After a limb has been amputated, the flaps are not even approximated, but are left entirely open. A pillow of oakum is placed under the stump, which is allowed to rest on this support until the wound is nearly healed. A small piece of gauze is placed over contour of stump, which also is protected from the bed-clothes by a cradle. No sutures, except a few in lateral skin-flap amputating. No bandage, charpie, or fenestrated compresses. The wound is irrigated with carbolized water, and balsam of Peru is poured over the granulating surfaces. It is said the discharges do not decompose at ordinary temperatures. When suppuration has nearly subsided, the flaps are approximated by adhesive strips. No sponges. Each patient has his own bottle of balsam, and, as far as practicable, separate instruments are used for each case.

"When I was first acquainted with the practice of the Pennsylvania Hospital, no sutures at all were used. The wound was brought together by adhesive straps, and the Maltese cross and charpie were applied. After this the water dressing was used for a long time, the wound being approximated either by straps or by sutures. Then close sutures, with light dressings of zinc ointment, were used. The open method, modified somewhat, was tried, as was also the earth dressing. Now there is an almost universal use of sutures, which are closely applied and at once, in the hope of getting primary union. We all know that such union is extremely rare in major amputations. When there is much oozing, so as to forbid the closing of the wound at once, the most humane method is to introduce the sutures while the patient is still under the anæsthetic, and to leave them loose until the bleeding has ceased. We have had too little experience of the strictly antiseptic dressing at this hospital to pronounce upon its merits. No special records of the results of all of these ways of treating stumps have been kept. I may safely say, however, that all have had their shares of successes and failures, and that we have, as in almost all classes of cases, individual peculiarities to deal with which frequently on the one hand defy all our efforts, or on the other get well under whatever treatment may be adopted, provided the radical matters of free drainage and cleanliness are attended to."

Dr. Morton thought that the form of amputation and the subsequent dressings should depend much upon the nature of the disease or the injury for which the limb was removed. In railroad accidents, it was wise to go considerably above the point of injury, for often an amputation through what seemed to be sound tissues developed inflammation of a destructive character as a result of cellular and capillary injury. In secondary amputation or for chronic disease, the union of the flaps is often accomplished at once. His plan was to introduce drainage-tubes, to close the stump by silver wire, a few strips of adhesive plaster, and over the whole part carbolized oil or lint; then a firm bandage, if not much bruising of the adjacent soft parts; to watch the progress of the case, and, with the least swelling, to relieve at once all pressure, or even cut one or more of the sutures. Dr. Morton had on several occasions employed the open method, but found that the flaps uniformly retracted, giving rise to much trouble in securing a good covering for the stump.

Dr. S. W. Gross thought the views of Dr. Morton well taken. He felt that, in consequence of the undue retraction of the flaps, a corresponding amount of bone should be removed, and this was frequently a point of great importance. If drainage were the main feature in the "open dressing" of wounds, he was assured that this could be quite as efficiently carried out by plans well known to the profession.

Dr. Nancrede was not an advocate of the open method. He had never tried it except in a modified way. He had, however, dressed nearly thirty major amputations in the following way. After close coaptation of the flaps by sutures and straps (free provision having been made for drainage by tubes, bunches of catgut, etc.), the stump was washed out by

large quantities of weak carbolized water, and then dressed with antiseptic gauze or carbolized oil. At the end of forty-eight hours all dressing was removed except stitches and straps, and even the former if the drainage was imperfect. The limb was then placed upon a pillow, and covered with a piece of lint wet either with carbolized water, carbolic acid and iodine, or alcohol and water, used merely to prevent accidental contamination and to insure disinfection, while at the same time free drainage was secured by preventing the formation of occlusive scabs by desiccation of the discharges. In fact, whatever the dressing used, he always threw the stump thus open when tension and profuse or unhealthy suppuration occurred, and with the best results. One precaution was necessary even for this modification of the open method, —viz., to cut the flaps at least one-third longer than usual; otherwise, unpleasant retraction and protrusion of the bones might obtain. Where the deeper parts of the wound had united, with diminution in the amount and improvement in the character of the discharges, or where collections of pus occurred which did not drain away freely, the ordinary methods of compresses, from bandaging, with appropriate dressings, were of course resorted to.

Dr. Packard said that he had had no experience with the open method, properly so called, but that he had at one time adopted the Teale plan of merely suturing the flaps and applying no dressing whatever. He thought the open method would be objectionable where the tissues of the stump were largely muscular, on account of the danger of their retraction if unrestrained. It would be better to exercise choice between different modes of dressing, according to the size of the limb, the condition of the tissues and of the patient's system, and the atmospheric and other surroundings.

A simple and very generally applicable plan was to suture the edges of the amputation wound, leaving a drainage-tube between them, then to apply a complete covering of lint soaked in hot laudanum, and over this waxed paper, the whole being enveloped in cotton wadding (raw cotton), and a tolerably firm bandage applied in the case of restless patients. For those who lie quietly, the roller is not necessary, but broad strips of adhesive plaster suffice.

Dr. Mears considered the open-method treatment of stumps as at variance with the well-established principles of surgery. An amputation may be regarded as a large and deeply-incised wound, and the treatment should be conducted upon the same principles as those which guide us in the treatment of incised wounds in general. It is the duty of the surgeon in these wounds to promote primary union by accurate apposition of the cut surfaces, to provide for the prompt and free escape of effused fluids by the introduction of drainage-tubes, when necessary, and to protect the wound by the application of suitable dressings.

If we study the healing of wounds in animals, we find that nature endeavors to protect the wound by a covering, whilst the reparative process takes place beneath. It seems hardly justifiable to submit the patient to the delay in the healing of the wound which the open method entails, or to the sacrifice of tissue required to be made in the formation of the flaps, which must be longer than when other methods of treatment are adopted.

Dr. Morton stated that he had resorted, two months since, to median cystotomy in the case of a male aged 60, who had extreme vesical inflammation due to the presence of a papilloma. The relief to the patient was immediate, and continues so long as the flow of urine through the wound meets with no obstacle. Dr. Morton had contrived a self-retaining catheter, which was just long enough to enter the bladder, with poles and side-slits, which answered very well; but it would not permit the patient to sit with any comfort. Dr. Morton asked the Fellows if they could suggest, from experience, an instrument which could be retained with comfort in all positions. A rubber ring cushion for sitting upon had been tried, but did not give the expected relief.

Dr. Packard suggested that a soft-rubber tracheotomy tube might answer the desired purpose in Dr. Morton's case, and alluded to the T-shaped drainage-tube of Trendelenburg as another device perhaps available.

Dr. Levis suggested making a second, very small, opening into the bladder, a little farther back, and then to pass a gum tube through and out at the original opening. This would secure drainage without inconveniencing the patient, allowing him to go about and to sit down without the annoyance of a rigid tube projecting through the tissues.

OSCAR H. ALLIS, M.D.,
Recorder.

NEW YORK ACADEMY OF MEDICINE.

STATED MEETING, JUNE 15, 1882.

Dr. R. F. WEIR, Vice-President, in the Chair.

THE first scientific work of the evening consisted of a paper on "Static Electricity as a Therapeutic Agent," read by Dr. J. KNIGHT.

Having had experience in the use of static electricity for over fifty years, and having availed himself of much reliable information from others regarding it, he would endeavor to present the subject in as comprehensive a manner as possible. The opinion of authors was quoted with regard to the generation of

static electricity by the earth's motion on its axis, the variations in electrical condition of the air as caused by a change in the weather, its influence upon the growth of plants, its disinfecting virtues by the generation of ozone, its constancy and uniformity in the higher regions of the atmosphere, its relation to the death-rate, etc. He then spoke of the satisfactory results which he obtained with the use of static electricity in the treatment of various affections many years ago. The machinery for employing it at that time was very imperfect and often inconvenient, but the results were sometimes very striking. On coming to New York he heard of the wonderful cures produced by it in the hands of a certain specialist whom he afterwards assisted, and thereby gained much useful information in the practical application of the agent in the treatment of various affections. Since then he had used static electricity to a large degree, but on account of imperfect machinery he often had to resort to dynamic electricity, which in many cases was also a very useful therapeutic agent. The first efficient electrical apparatus for the generation of static electricity which he had seen in this country was one of Holtz's, which was on exhibition at a fair ten years ago. It passed sparks from pole to pole, a distance of six inches, under the most unfavorable conditions. He was unable, however, after this to find another like it in the market. Static electricity was subject to many forms of application different from dynamic electricity, and was, he believed, more extensively useful as a therapeutic agent. Its influence upon the animal economy was both that of an excitant and of a decided sedative, while, according to his long experience, dynamic electricity acted merely as an excitant, and therefore had a more limited field of usefulness. With the former the practitioner had the power of controlling various degrees of nervous energy, either of deficiency or of excess. The influence of a shock, if desired, could be directed immediately upon the part affected. For its proper application, the operator should have a profound knowledge of anatomy and physiology and therapeutics. Its usefulness was seen in the treatment of nervous exhaustion, paralysis, erysipelas, gangrene, indolent ulcers, deficient nutrition, etc. Indeed, it worked in the direction of health even in the most opposite affections. It quickened the vital forces or animal function of the parts to which it was applied; it had a reactive power, and, as an alterative, promoted nutrition. In the latter case it acted either by means of the nervous system or by direct influence upon the tissues of the part. For this purpose either galvanic or static electricity might be used. As a general rule, the current should be feeble, and the application long continued. It was useful in the promotion of action in the absorbents in cases of effusion of serum or lymph, and almost all kinds of tumors, with the exception, perhaps, of those of a malignant nature. In these cases the rule was to apply it directly to the parts affected, although the idea was not forgotten that a vital stimulus artificially applied directed its influence preferably upon that function whose efficiency was suspended, or, in other words, it tended to harmonize the various vital functions when disproportionate. A graphic description was given of the case of a man whose joints became stiffened following exposure from work on a mill-dam, disabling him entirely from locomotion, and causing great suffering. By repeated applications of static electricity, extending over several months, he was finally cured and enabled to return to business. On more than one occasion during the treatment by electricity he became excessively irritable, although an improvement in the joint-trouble was noticeable. Venesection and less assiduous electrical treatment for a time relieved these apparent congestions of the brain. His experience with it in private practice and in the Hospital for the Ruptured and Crippled corresponded so closely with that of Dr. Goldenberg that he felt justified in quoting largely from this writer. Favorable results had been obtained in cases of paralysis of the portio dura, of one limb, of one side of the body, etc.; in cases of rheumatism and its results, of atrophy of the muscles from different causes, of drop-wrist from lead-poisoning, etc. Authors were quoted to the effect that cases of hemiplegia after apoplexy had thus been cured. If improvement ceased under the use of electricity, he would recommend its discontinuance for a week or two.

DISCUSSION.

Dr. DANA had seen improvement in certain cases from the use of static electricity, which led him to inquire whether it was true that electricity was confined entirely to the surface of the body and did not penetrate more deeply. In the cases referred to, the patients complained of what they called "biliousness," and a constipation of the bowels, etc. After applying the electric roller and shocks over the abdomen and region of the liver for a time, they greatly improved, and were very much satisfied with the result of the treatment. This satisfaction could not have been due entirely to an imaginary improvement, as they had before been subjected to various methods of treatment, as by the faradic current, etc., but without benefit. These results would seem to point to a penetration of the electricity to some distance within the body; but after some not altogether conclusive experiments he had come to the conclusion that the generally-accepted idea that it was confined to the surface was correct, and that the influence upon the deeper parts in these cases was due to

reflex action. He had observed the tonic effect which the electric bath had upon certain persons, as referred to by the author of the paper, but that a larger number were benefited by static electricity than by other forms he thought remained yet to be proved.

Dr. MORTON thought the history or growth of static electricity in this country might be divided into three periods: the first extending from 1740 to 1800, when the subject of electricity in general attracted wide attention; the second, a period extending from 1800 to 1869, when the subject of static electricity received comparatively little attention; the third period beginning with 1869, at which time Prof. Charcot's labors directed attention to it anew. Two years ago, he, Dr. Morton, read a paper on the subject before the Academy, which he believed did much to give it the strong impetus which it had lately received in this country. It was a valuable therapeutic agent in cases correctly diagnosed and properly selected. Much depended upon the manner of its application, and he believed it should be used in strong quantities rather than in feeble quantities. It should be applied, as far as possible, directly to the affected part. We had no reason to suppose that static electricity applied to the system in a general way acted as a therapeutic agent in a special manner, any more than did heat, light, etc. In certain forms of paralysis, electricity produced muscular contracture while galvanism did not. There was great danger of giving the electrical method of treatment the credit of effecting a cure when in fact the affection disappeared, so to speak, of itself. There was only one class of cases in which he believed static electricity possessed advantages over other forms,—namely, those with which there was associated an hysterical element. In such, by applying the shock pretty freely over the spine, he had often seen sensitiveness of certain parts of the body, cold hands, numbness, etc., disappear. It was of value in stiffness of the joints from gout, rheumatism, etc., and in paralyses where it was desirable to excite the muscles. It was easier of application than other forms of electricity. As to its influence upon the deep-seated organs, he had had a little experience, which corresponded with that of Dr. Dana.

Dr. ROCKWELL thought the interest of the question centred in the fact whether static electricity had or had not advantages over the other two forms of electricity in use as therapeutic agents. That static electricity possessed restorative virtues he believed, but that it excelled the other forms in this respect he did not believe. It was easier of application both to the operator and to the patient, and for that reason he was almost tempted sometimes to make use of it more extensively when he felt that as a matter of fact it would be less likely to prove beneficial. If the other forms ceased to be of benefit in a given case, he thought it well to try this, and afterwards return to the former, just as it was often of benefit to change the kind of drug administered although the object desired to be effected remained the same. He believed that static electricity did have an effect quite deeply in the tissues, but how, was unexplained.

In closing the discussion, Dr. KNIGHT thought much credit was due Dr. Morton for exciting an interest in the subject of static electricity in this country by the paper which he read before the Academy two years ago.

Dr. FREDERICK D. LENTE read a paper entitled "A Hitherto Undescribed Lesion of the Knee-Joint." The lesion referred to was produced by a variety of accidents, most of them of a trivial nature. A man, for instance, while walking along a road might strike the toe of his boot against some obstacle, causing only sufficient pain to induce him to limp slightly in the knee for a few yards, but after a day he finds his knee becoming slightly painful on locomotion. This may disappear, to be renewed from time to time, and with increasing severity, until, if neglected, the stiffness and soreness of the joint may be such as to require confinement to the house for many months. Several such cases which had fallen under his own care, and others of which he had heard, were related. Different from other knee-joint affections, the patient found greatest comfort with the limb in an extended position. The seat of the pain on pressure was usually just on the inside of the joint. His treatment consisted in perfect rest by applying a splint, retaining the limb in the extended position. No danger was to be feared of anchylosis from too protracted immobility. Several writers mentioned cases somewhat similar, and spoke of displacement of the semilunar cartilage, etc., but he believed that in no case did the description correspond fully with what he had mentioned. The pathology of the lesion he would leave for others to suggest.

The Chairman remarked that since reading an article on the subject by a German authority he was less disposed to regard this lesion as one of displacement of the semilunar cartilage, but rather as an inflammation of it often arising from a slight injury. He not infrequently saw such cases at the college clinic, and a cure was almost always effected by absolute rest.

Dr. L. H. SAYRE related a similar case, and referred to others in his practice, and he felt indebted to the author for calling attention to a lesion which too often went on to serious consequences because regarded as of little importance and not properly treated when the physician's attention was first called to it.

Dr. JUDSON said that if we might be al-

lowed to theorize upon the pathology of the lesion, he thought it not impossible that some of the cases had their origin, perhaps, in a disease of some of the tissues entering into the formation of the joint, and not in the accident to which it had been attributed.

Dr. GIBNEY thought the point of practical interest, and one which deserved special attention, was the fact that absolute rest of the joint should be secured a sufficient length of time. There was no danger of anchylosis.

The Academy adjourned to meet on the first Thursday in October, 1882.

NEW YORK PATHOLOGICAL SOCIETY.

A MEETING of the Society was held June 14, 1882, Dr. E. C. SEGUIN, President, in the chair. The minutes of the previous meeting were read, and approved as corrected.

MYXŒDEMA.

Dr. CUSHING presented the heart and kidney of a patient who died of this affection. She was 57 years of age, and had borne twelve children. Her general health had been good. About fifteen years ago her friends noticed a change in the appearance of her face, as if it were swollen. Dr. Cushing first saw her five years ago, at which time she presented very much the appearance of a person suffering from Bright's disease of the kidneys. The face was swollen and waxy in appearance; the extremities were swollen, particularly the lower ones; the skin was shiny in appearance, and dry and scaly. There was a peculiar obliteration of all the lines of the face, and while in general the appearance was that of Bright's disease, in some respects it differed. The lips and the tongue were thickened, the eyelids were boggy, and there was a marked line of pallor between them and the pink-colored cheek below, more marked during the last year or two of her life. The hair was dry and brittle. After careful examination, she was unable to discover any cause for the œdema. There were no signs of kidney-disease, and the heart was only a little enlarged at this time, and manifested no lesion of the valves. There appeared to be nothing abnormal about the lungs, liver, or spleen. About a year and a half ago she read an article in the *Medical Record* on myxœdema, in which the description of the disease corresponded so nearly with what was observed in this case that she hesitated no longer in making the diagnosis. Dr. Putnam Jacobi saw the patient with her, and they quite agreed that she was suffering from myxœdema. No special symptoms arose further until two weeks ago, when an acute dermatitis developed, and just before death there was an acute inflammation of the upper portion of the left arm, and a small circumscribed phlegmon of recent date was found in the right breast. The patient was in a somewhat stupid condition, requiring comparatively a long time to comprehend questions and answer them, and this condition increased towards the close of life. Still, she read a good deal, and was intelligent when aroused. Death took place from progressive heart-failure. A microscopic examination of the organs had not yet been made. The heart was enlarged, the arteries undergoing atheromatous degeneration, the liver normal in size, but quite firm, as were also the kidneys. All the muscles of the body were very pallid. There was an infiltration in the fat throughout the body which seemed to be mucoid in character. The simple œdema of the extremities had disappeared, and the mucoid infiltration seemed to have remained only in the face and the upper part of the back.

Dr. HOWE remarked that some authorities considered the œdema due to a low grade of inflammation of the cellular tissue.

In reply to a question by the President, Dr. CUSHING said the speech seemed not to be affected except as it might be accounted for by the great thickening of the tongue, which was probably due to mucoid degeneration.

The President had seen a patient within a week upon whom he was about to pronounce the diagnosis of myxœdema. She had œdema, apparently, although the swollen face did not present exactly the appearance that it does in Bright's disease. It was heavy rather than boggy in appearance, the lips projected and were markedly thickened, and the tongue was enlarged. There had been œdema of the legs, but it had disappeared. No heart- or kidney-disease was apparent. The patient was anæmic, the speech was affected, she was slow in her mental processes, the memory was weak; she had had numbness of the fingers.

Dr. HOWE asked whether the mucoid degeneration in the connective tissue was not secondary to a progressive cellulitis, and not a primary change.

Dr. CUSHING replied that the cellular inflammation in this case did not develop until about two weeks before death.

CEREBRO-SPINAL MENINGITIS.

The specimen was presented by Dr. DRAKE, and the patient from whom it was obtained died in Bellevue Hospital on the 11th of June. On his admission, on the 5th of this month, he was in a comatose state, and had considerable convulsive movements. There was marked loss of sensation, particularly on the right side, which side also was paralyzed. The temperature was 104° F., the pulse 98, hard in character, and occasionally intermittent. Both pupils were contracted. Respi-

ration 24. The diagnosis of meningitis was made. The following day the temperature had risen to nearly 105°, the pulse 100; there was less loss of sensation; he moved when irritated on the right side, but was more sensitive on the left. On attempting to set him up in bed, considerable rigidity and tenderness of the back was discovered. It was not before the second day after his admission that a history could be obtained, which was that he was a German, 45 years of age, a coal-heaver. While at work on the 3d of this month he was suddenly taken sick, had some convulsive movements, became unconscious, and he remained so until death. On the third day after admission he was sufficiently conscious to put out the tongue. The pulse and temperature afterwards rose higher, and on the 11th he died. At the post-mortem examination all the organs except the brain and the cord were found normal. There was a large amount of sero-purulent fluid at the base of the brain, and also on the anterior surface of both hemispheres. The ventricles were widely distended with sero-purulent fluid. There was a purulent exudation throughout the whole length of the cord, most marked in the dorsal portion, and confined posteriorly. He presented the case more especially to obtain an expression of opinion as to the great suddenness of the attack, the patient being able to continue his work up to its onset.

Dr. J. LEWIS SMITH had seen a case of cerebro-spinal meningitis recently in which the post-mortem changes were very much like those in Dr. Drake's case. The child was attacked suddenly, and he believed it to be the rule that the disease began apparently without any premonition.

Dr. DRAKE remarked that it developed slowly in a case he has under observation at present. The patient recovered from the first attack, but has relapsed from time to time.

SARCOMA OF THE BRAIN.

Dr. AMIDON presented the specimen. It was removed from a man 49 years of age, whose paternal grandfather died of cancer of the stomach, and his own sister died of cancer of the breast. The patient himself had been healthy until a year before death,—had had no disease which would throw light upon this illness. In November, 1880, he had a very severe attack of neuralgia in the left occipital region, the pain being located about midway between the mastoid process and the median line of the occiput, extending down upon the back of the neck upon the left side to about the second or third cervical vertebra. It was much worse at night. It continued about a month, and over this region there was marked hyperæsthesia. The next summer he was pretty well, with the exception of a tired feeling in the legs, and occasional attacks of what could be described only as a general malaise. In October, 1881, the legs became stiff, particularly the right one, which was also numb and œdematous. The walk was stiff and labored. Two prominent homœopathists were consulted, one of whom made the diagnosis of anæmia of the spinal cord, and the other of locomotor ataxia. In November he consulted Dr. Seguin, who put him under Dr. Amidon's care. At that time he had had for the past three weeks hemispasms, beginning in the right abdominal muscles, invading the arm and leg of the same side, but never extending to the face. They occurred frequently, but without loss of consciousness until after three weeks. Dr. Seguin made a note of partial right hemiparesis, a stiffish, weak right leg, a pretty good grasp, no aphasia, no headache, no choke-disk. About December 4 he had paresis of the right leg, slight paresis of the upper part of the right arm, and he gradually became hesitating in speech. The movements of the right shoulder and elbow were partially restricted, but the grasp of the right hand was strong, and there was no paresis of the face or lesion of the optic nerve. About this time he had a fainting-spell in the night, in which he nearly died. A similar one occurred on the 6th of December, 1881, causing death. The last time he saw the patient before death there was complete right hemiplegia, almost complete aphasia, no choke-disk. The only lesion found at the autopsy was in the brain. The convolutions in the left parietal region were very much flattened, extending also to the occipital region, but there was no flattening in the frontal region. A section through the brain revealed a tumor in the left paracentral lobule about the size of an English walnut, and another the size of a pea. It was sarcomatous in character, and surrounded by a zone of excessively vascular tissue. A curious fact in the history was the loss of power in the elbow and shoulder while the grasp of the hand was still strong.

TRISMUS NEONATORUM.

Dr. J. LEWIS SMITH presented a specimen removed from a child who died at the age of 15 days. Eight days after birth there was rigidity of the masseters, the rigidity afterwards affecting nearly all the muscles of the body. It was pretty well controlled by the free use of hydrate of chloral, but about twenty-four hours later the opposite condition appeared, there being great relaxation of all the muscles. The child died, and at the post-mortem examination the only abnormal appearances discovered were the signs of a general peritonitis, the cause for which was not ascertained. Various causes had been assigned by different writers for trismus neonatorum, but no uniform lesion had been found at autopsy.

The Society went into executive session.

GLEANINGS FROM EXCHANGES.

TREATMENT OF ACUTE SPINAL PARALYSIS.—In some remarks upon Acute Spinal Paralysis in the *British Medical Journal* for May 20, Dr. Gowers gives some points as to treatment which are interesting and suggestive. He says, "Many points in the treatment of these cases deserve discussion. What is the best posture for a patient in the early stage of the disease? The extreme distention of the vessels within the spinal canal in a body which has lain on the back, familiar to all, suggests how undesirable this position is in acute myelitis. And yet, in many cases, no other posture can be borne for long, and motion is as undesirable as gravitation. We have too often to be content with a compromise. The prone position is the most desirable; next to that, if rest can be secured in it, the lateral; the worst is the dorsal.

"Are any local applications to the spine desirable in the early stage? It is only rational to treat these cases as we should treat other internal inflammations. But of the forms of local treatment,—leeching, counter-irritation, warmth, or cold,—which is best? Much must undoubtedly depend on the patient's age and state. Counter-irritation has fallen somewhat into disfavor as a means of treating the acute stage of inflammation. It is probable, however, that this *modus operandi* and that of heat and cold do not greatly differ; that, by each, first vascular constriction and then dilatation are obtained; and so blood-stasis is lessened, and, therefore, also the migration of leucocytes, which the microscope has proved to play an important part in the damage to the spinal cord from acute inflammation. But how important it is that this effect should be aided by a posture which lessens mechanical congestion! I cannot but think that the damage to the cord would often be lessened were the early treatment of these cases conducted on the principles which we apply to acute inflammation elsewhere.

"Should not the internal treatment in the early stage be rather that for the morbid process than for its seat,—be that for an internal inflammation rather than for a disease of the spinal cord, and therefore consist of aperients, diuretics, and agents which act on the vascular system, rather than nervine remedies? During the stage of recovery, there seems no reason to doubt that nervine tonics do some good; and on the value of electricity and skilled rubbing there is a fair agreement of opinion. When the disease was regarded as purely muscular, it was thought that electricity actually cured it in some cases. The proof that the seat of the disease is the spinal cord renders this opinion extremely improbable. Beyond doubt, the application of the voltaic or constant current to the muscles (to which their fibres will still respond, although insensitive to faradization) improves their nutrition, lessens their wasting, and keeps them in a better condition to respond to any nerve-power over them which may ultimately be regained by the recovery of damaged cells and regeneration of degenerated fibres. Thus the ultimate state of the patient is better than it would be without electricity. It is desirable, therefore, to use such a current as shall cause slight visible contraction in the muscles. Unfortunately, children are often so much frightened by even a very weak application that the needful strength cannot be employed without causing an amount of emotional disturbance, which may not unnaturally be regarded as doing the child more harm than the electricity does good. Here, again, we have sometimes to be content with a compromise. A weaker current than will cause contraction has probably some influence on muscular nutrition; and I think the best rule is to employ such a strength as the child will bear without much emotional disturbance, whether we can thus get muscular contraction or not. If care be taken to avoid alarming the child at the commencement, a current of some strength can often thus be employed.

"Is the influence of electricity confined to the muscles? Does it aid the recovery of the spinal cord and nerves? Some believe that it does, and urge, therefore, that in treating the muscles one pole should be placed upon the spine; and the method is, on *a priori* grounds, a reasonable one. But the tendency of the disease to spontaneous improvement renders it extremely difficult to form an opinion on this point. For myself, after a careful comparative trial of the two methods of applying electricity,—from the cord to the muscles, or to the muscles only,—I have been unable to observe any superior advantage in the former method, which seems, even when a large spinal electrode is employed, to disturb children more than the application to the muscles only. At the same time, beyond the increased discomfort, there is no objection to the application of one pole to the spine.

"How soon should electrical treatment be commenced? I cannot think it desirable to apply the voltaic current to the spine within one month of the onset; but it may certainly be applied to the muscles, with care, much sooner,—at the end of ten days or a fortnight, when the 'reaction of degeneration' has become distinct."

A CASE of poisoning illustrating the antagonism between strychnia and morphia is reported by C. Harrison, M.D., in the *Lancet* for May 13:

"J. W., aged 54, stated to have taken a small packet of Battle's vermin-killer at 4.40 A.M. on Wednesday, February 15, 1882. When seen at 8.45 A.M. he was lying on his back in bed, bathed in perspiration, countenance dusky, lips livid, pupils contracted. Pulse 130; arms and abdominal

muscles flaccid; legs rigid, calves hard as a board, soles of feet curved. Complained of a feeling of suffocation and intense thirst. An emetic of sulphate of zinc was given, and warm milk-and-water. On attempting to raise him to take the liquid, violent spasms came on, the arms, neck, and jaw becoming stiff. Soon after taking the emetic he vomited copiously; he was then ordered twenty grains of hydrate of chloral every two hours. After the first dose of chloral the spasms were less frequent, and the rigidity gradually subsided; after the third dose he was much improved, but the legs still continued rigid, the muscles of the neck were painful, and the mouth was opened with difficulty. His chief complaint, the intense thirst, was relieved by sucking ice. On the third day he was convalescent.

"On becoming calmer, the following history was obtained from the man. He had been drinking freely for some time previously; had eaten no food for a few days, and was very depressed. Went to bed on the afternoon of the 14th inst. in drink, and, being restless during the night, and scarcely knowing what he did, went down-stairs about 4.40 A.M., mixed a package of vermin-killer with all the laudanum he could find (about a teaspoonful and a half), then added some rum, and, having swallowed it, he rinsed the glass with more rum and drank it. He went back to the bedroom, walked about for half an hour, then lay down. First spasm came on about 5.30, and recurred regularly every half-hour, commencing in the legs and shooting through the body. Each spasm drew him up, and he felt as if his hands and arms were frozen to his chest. His housekeeper, who slept in an adjoining room, stated she first heard him cry out about 6 A.M., but she took little notice of it, as he often made noises when in drink. She heard him several times, and went to him at 8 A.M. She found him in bed, staring and grinning at her; his head was thrown back over the pillow; he seemed to be resting on his heels and the back of his head. Was stiff and immovable, and his body was arched like a bridge; hands fast to his side. The first quantity of urine passed was accidentally lost, but from the second (about four ounces) one-twentieth of a grain of strychnia was obtained. No strychnia was found in his vomit. On examining a threepenny packet of Battle's vermin-killer I found it to be a slaty blue color, weighing fourteen grains, composed of wheat starch and three-quarters of a grain of strychnia.

"The case is interesting, as, after a poisonous dose of strychnia, taken under the most favorable conditions for absorption, fifty minutes elapsed before any symptoms exhibited themselves, and the man was alive four hours after, although no treatment whatever had been adopted. No doubt a fatal result was prevented, and the intensity of the symptoms modified, by the laudanum which was added for the purpose of making the dose more deadly. A case is reported in the *Lancet* of 23d December, 1871, where a packet of this vermin-killer was taken with two drachms of laudanum and some binoxide of mercury. When seen three hours after, there had been no strychnia symptoms, but dangerous narcotism. In the case of J. W. there was no narcotism, but severe spasms, which were almost immediately relieved by the hydrate of chloral."

MISCELLANY.

DETAILED FOR FOREIGN SERVICE.—The *English Army and Navy Gazette* says, "We have been informed that when the medical officer in charge of women and children at Netley recently proceeded on leave of absence, his work was delegated to another officer, who, being called upon to attend a woman in labor, informed the applicant that he had not seen such a case for more than fourteen years. The other officer was recalled by telegram. Should this statement be correct, it seems to us that it would certainly be for the interest of the Service if the delegated officer was placed for instruction under a qualified midwife, the course to count as a tour of foreign service."

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY FROM JUNE 11 TO JUNE 24, 1882.

MAGRUDER, D. L., MAJOR AND SURGEON, MEDICAL DIRECTOR OF THE DEPARTMENT.—The leave of absence granted him from headquarters, Department of the Missouri, extended fifteen days. S. O. 64, Military Division of the Missouri, June 22, 1882.

ELBREY, F. W., CAPTAIN AND ASSISTANT-SURGEON.—To be relieved from duty in Department of the Missouri, July 1, 1882, and to report in person to the Surgeon-General in this city. S. O. 137, A. G. O., June 14, 1882.

HOFF, J. V. R., CAPTAIN AND ASSISTANT-SURGEON.—Having reported at these headquarters, is assigned to duty as post-surgeon at Alcatraz Island, California. S. O. 107, Military Division of the Pacific and Department of California, June 17, 1882.

REED, W., CAPTAIN AND ASSISTANT-SURGEON.—To accompany the troops from Washington Barracks, D.C., and Fort McHenry, Md., on their march to the summer camp at Gaithersburg, Md., and to remain on duty with them during the encampment. S. O. 104, Department of the East, June 9, 1882.

APPOINTMENTS.

To be Assistant-Surgeons, to rank from May 23, 1882.

WM. E. HOPKINS, of California, vice Yeomans, deceased.
CHARLES C. BARROWS, of Mississippi, vice Brewer, deceased.
BENJAMIN MUNDAY, of Virginia, vice H. E. Brown, promoted.
GEORGE F. WILSON, of Oregon, vice J. M. Brown, promoted.
WILLIAM E. OWEN, Jr., of Tennessee, vice King, resigned.
PETER R. EGAN, of New York, vice Hubbard, promoted.
WILLIAM J. WAKEMAN, of Connecticut, vice Coues, resigned.
EDWARD EVARTS, of California, vice Whitehead, deceased.
A. G. O., June 12, 1882.

NOTSON, WM. M., MAJOR AND SURGEON.—Died at Columbus Barracks, Ohio, June 23, 1882.

MOFFATT, PETER, CAPTAIN AND ASSISTANT-SURGEON.—Died at Fort Cœur d'Alène, Idaho, on June 15, 1882.